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CERTAIN ASPECTS OF BRONCHIAL, PULMONARY AND PLEURAL DISEASE

FREDERICK T. LORD, M.D.

BOSTON

There are two general aspects of the subject to which I would first call attention, and they are of such a simple and elementary character as often to have escaped the attention they deserve. I refer to the diagnosis of bronchopulmonary or pleural disease by the universally applicable methods of history taking and physical examination, which are, after all, the most valuable means of investigation, and as such merit the most careful study.

I would emphasize, as regards the history, the important diagnostic value of the evolution and progress of individual symptoms, and more especially the careful inquiry concerning the order of appearance of the earliest manifestations. A striking example of the value in differential diagnosis of attention to the march of events may be found in a history of sudden onset of pain in the side, cough with bloody expectoration, and chill or chilliness, this triad of symptoms being common to both lobar pneumonia and pulmonary infarction, but most suggestive of the former when accompanied or followed within a few hours by a rapid rise of temperature, and of the latter when the elevation of temperature takes place gradually within a day or two. If the embolus, giving rise to the infarction, comes from a latent venous thrombosis, only careful attention to the evolution of the initial symptoms may suggest the diagnosis. Of other conditions in which the history is of prime importance, the diagnosis of aspirated foreign bodies, the distinction between bronchial and cardiac asthma, the detection of the underlying cause of an apparent chronic bronchitis, and the determination of the etiology of hemoptysis and of pleurisy may be mentioned.

Concerning the physical signs of pulmonary disease, it is possible to make a very simple generalization, useful for purposes of teaching physical diagnosis, by grouping together those conditions in which, as in lobar pneumonia with patent bronchi, there are dulness, bronchial breathing, increase of voice, whisper and tactile fremitus. These physical signs are common to consolidation of the lung from such other causes as bronchopneumonia, pulmonary infarction, and retraction or compression of the lung in consequence of accumulation of fluid in the adjacent serous sacs. In a second group, as in the presence of pleural effusion, there is dulness and, owing to the lack of communication of the involved region with the bronchi, diminished or absent breathing, voice, whisper and tactile fremitus. This group of signs obtains in massive pneumonia, pulmonary or pleural tumors, pulmonary cysts and atelectatic areas arising in consequence of bronchostenosis. If resonance be substituted for dulness in the second group, the findings are consistent with pneumothorax, which completes the list of important pathologic conditions.

ASPIRATED FOREIGN BODIES

The first of the special subjects to which I would refer may be illustrated by the problem presented by a child with the history of "having swallowed something and choked." In such a case it is highly important to inquire concerning the evolution of the initial symptoms and to determine whether, as commonly happens, paroxysmal cough, dyspnea, suffocation and cyanosis were among the earliest manifestations, followed in turn by comparative freedom from symptoms for a few days and then persistent cough and expectoration, and to distinguish this complex, which suggests an aspirated foreign body, from the less frequent initial dysphagia, and freedom from cough and dyspneas, with the later development of cough and expectoration, arising in consequence of the impaction of a foreign body in the esophagus and subsequent rupture into the air passages. Aspirated foreign bodies gain access to the right primary bronchus or its branches in a large proportion of cases. The physical signs are those of atelectasis, and the localization is greatly assisted by Roentgen examination.

Persistence of the foreign body is almost invariably followed by chronic bronchopulmonary suppuration. In connection with treatment, three matters deserve special emphasis: In the first place, the chance of spontaneous expulsion, contrary to a too prevalent belief, does not justify delay in treatment. Secondly, the usual therapeutic procedures, a blow on the back, shaking the patient and the use of emetics, should not be employed. Finally, immediate effort should be made to extract the foreign body with the assistance of the bronchoscope. No community can be regarded as properly protected without one or more physicians skilled in the use of this instrument, and there are broad stretches of the country still unprotected and numerous lives lost in consequence each year.

POSTOPERATIVE PULMONARY CONDITIONS

A closely allied subject is the occurrence of pulmonary complications following operations under general anesthesia. Their incidence seldom falls below 2 per cent. even in the best conducted clinics, and not infrequently rises as high as 3 per cent. or more. A

greater relative frequency is usually noted during the colder months of the year and after abdominal operations. It may in general be said that about one quarter of all deaths following operations under general anesthesia are due to lung complications, of which bronchopneumonia, and less often lobar pneumonia, are the most common and serious. A more serious aspect is presented by pulmonary abscess, which has followed the removal of tonsils or adenoids, the extraction of teeth, and operations on the nasal septum or about the mouth in nineteen out of 206 cases of pulmonary abscess in our series. Symptoms usually begin from one to four days after operation, and the right lower lobe was involved in about one half of the cases. Nine patients died. Owing to the scattered sources of this material, it is impossible to say out of how large a number of operations on the mouth or nasopharynx these nineteen cases have occurred, but it is sufficiently disturbing to find about one in every ten cases of pulmonary abscess due to this cause, and at the same time to believe that the accident might have been prevented by the exercise of greater caution in the selection of the time for, and in the performance of, the operations.

While it is not always possible in postoperative pneumonia and abscess to determine the cause, yet it is probably fair to say that an acute infection of the respiratory tract existing at the time of the operation is responsible for a considerable proportion of the surgical cases, and that the aspiration of infected blood or tissue is the usual source of the complication after operations on the mouth or nasopharynx. It should be an invariable rule, therefore, never to operate in the presence of an acute infection of the respiratory tract, no matter how mild this may appear to be, without due consideration of the danger. The mouth should be carefully cleaned before operation, and the inhalation of infected material should be prevented during the operative procedures.

ETIOLOGY OF CHRONIC BRONCHITIS

From a study of our necropsy cases I have been surprised to find how seldom the clinical diagnosis of "chronic bronchitis" is justified other than as a relatively unimportant secondary manifestation of a more serious underlying condition. Of 161 cases[1] with persistent cough, expectoration and râles during life, 103 (63 per cent.) were found at necropsy to have cardiac failure from valvular, myocardial or pericardial disease, arteriosclerosis or chronic nephritis as the probable explanation of the pulmonary symptoms. Pulmonary tuberculosis was responsible for thirty-one cases, including twenty-two with chronic ulcerative tuberculosis and nine with the miliary form of the disease. Nontuberculous pulmonary infection (subacute or chronic bronchopneumonia, lobar pneumonia with abscess and abscess or gangrene) accounted for fifteen more cases. Malignant disease of the lung or mediastinal glands was found in explanation of five. The seven remaining cases are of special interest as representing the only ones out of the group in which bronchial disease alone could account for the "chronic bronchitis." In six of these a study of the records indicated that bronchial asthma was the cause of the clinical manifestations, and the last case was one of syphilis of the trachea and bronchi. Thus out of the entire group not one was found in which a clinical diagnosis of "chronic bronchitis" alone could have been regarded as in any way adequately describing the actual pathologic condition. Nine instances of "winter cough" in the series are of interest. Seven proved to be of cardiac origin, one was due to pulmonary tuberculosis, and the last to syphilis of the trachea and bronchi. In the determination of the cardiac or pulmonary origin of the symptoms, attention to the sequence of the earliest manifestations is of importance. Those cases in which dyspnea is the first symptom, followed after a longer or shorter period by winter or persistent cough, will usually be found to be due to cardiac failure while, when cough and expectoration are initial symptoms and dyspnea is added later, a pulmonary and infective origin is usually to be suspected.

BRONCHIAL ASTHMA

Of asthma the most interesting aspect is its apparent dependence on a state of hypersensitiveness, as suggested by the similarity of its manifestations to anaphylaxis experimentally produced in animals by the injection of alien protein. This most promising of the theories of asthma has already received support from the recognition of occasional instances of bronchial asthma due to hypersusceptibility to eggs. Attacks following exposure to emanations from certain animals and especially from horses are of interest and importance in this connection. Goodale[2] suggests that there are infectious types due to sensitization to bacterial proteins arising in consequence of bacterial infection of the upper air passages. While the anaphylactic theory of bronchial asthma cannot yet be said to have yielded far-reaching results in solving the problem, it opens an interesting field for further study and should serve to emphasize the already long recognized, but too little heeded, danger of anaphylactic shock following the use of diphtheria antitoxin in patients with asthma. Within the past few years, six instances of death and one of collapse following the injection of diphtheria antitoxin in patients with asthma have been brought to my attention. All patients in whom the use of diphtheria antitoxin is under consideration should be questioned regarding a previous history of asthma or susceptibility to the presence of horses. Preventive inoculations of those suspected of anaphylaxis should be avoided, at least until the patient's susceptibility to diphtheria has been proved by the Schick test. As only about 20 per cent. of patients are thus found susceptible, prophylactic injection of serum in patients with asthma is not likely to be a frequent necessity. In patients with asthma to whom it is deemed necessary to give antitoxin for prophylaxis or treatment, the attempt should first be made to prevent anaphylactic shock by the injection of a small amount of the serum (from 0.1 to 0.25 c.c.) under the skin, and by the use of additional serum in the refractory stage which follows. In the experiments of Besredka,[3] about four hours were required in animals to produce the refractory stage by subcutaneous injection. Repeated small doses (0.5 c.c.) at half hour intervals thereafter until the required number of units is reached may be administered. More exact data on the nature and prevention of anaphylaxis are much to be desired.

1. Lord, F. T.: Diseases of the Bronchi, Lungs and Pleura, Philadelphia, Lea & Febiger, 1913, p. 95.

2. Goodale: Boston Med. and Surg. Jour., Feb. 17, 1915.

3. Besredka: Ann. de l'Inst. Pasteur, xxiv, No. 12, p. 879.

HEMOPTYSIS AS A SYMPTOM

Another subject may be illustrated by the history of a man, aged 46, who entered the hospital with a history of having coughed up a lump of blood as big as an egg, after rowing a race, twenty-four years before, and without preceding or subsequent pulmonary symptoms. This patient died following an operation for cancer of the stomach, and at necropsy obsolete tuberculosis of the lungs and bronchial glands was found as the probable explanation of the hemoptysis. This case is typical of what may be spoken of as "hemoptysis out of a clear sky." Of 856 cases of hemoptysis,[4] of which 549 were clinical and 307 necropsy cases, thirty (twenty clinical and ten necropsy cases) belong in this group with hemoptysis out of a clear sky or when cough and scanty expectoration alone cloud it. In all but one of these cases the cause was demonstrated to be pulmonary tuberculosis by the finding of tubercle bacilli in the sputum during life or of the lesions of tuberculosis at necropsy.

In the one exception in this group, the cause was syphilitic ulceration of the trachea and bronchi with fatal hemoptysis from rupture of a branch of the pulmonary artery through the right primary bronchus. Other authentic causes of bleeding in cases of this class, such as that following the ulceration and rupture of tuberculous glands into the air passages, new growth of the bronchial wall, echinococcus disease of the lung and endemic hemoptysis, may be mentioned. Hemoptysis in the presence of more marked symptoms of pulmonary or other disease is due to a variety of causes, of which the following in the probable order of frequency may be mentioned: Pulmonary tuberculosis doubtless heads the list and then in sequence, to judge from our necropsy cases, chronic passive congestion, lobar pneumonia (not bronchopneumonia) pulmonary infarction, nontuberculous pulmonary suppuration (abscess, gangrene and bronchiectasis), aortic aneurysm, new growth of the lung, and ulceration of the trachea and bronchi. Other causes than these are rare. Vicarious menstruation is still occasionally mentioned, but no example is found in our records, and I do not believe it can properly be regarded as a cause apart from some pulmonary lesion which is tuberculous in the great majority of cases. Hemoptysis in the course of disturbances of the nervous system, in persons with the so-called "arthritic diathesis" (Sir Andrew Clark's type) and in those with high blood pressure is likely to be found due to one of the above mentioned causes.

It is of interest to note in connection with this subject that of thirteen cases in which hemoptysis appeared to be concerned in the death of the patient, the fatal termination was due to loss of blood or suffocation in five, while in the remaining eight, all of which were tuberculous cases, the bleeding seemed to be responsible for rapid extension of the tuberculous infection. In fact, this seems to be the chief danger in hemoptysis due to pulmonary tuberculosis, and suggests greater caution in the use of morphin in hemoptysis due to tuberculosis. If morphin is successful in suppressing the impulse to cough when infected blood has been aspirated into neighboring or remote parts of the lungs, it will favor the retention of infected material. It should therefore be used only for very definite indications, such as irritative, harassing and unproductive cough or extreme nervousness.

4. For a more detailed report of these cases, see Transactions of the National Association for the Study and Prevention of Tuberculosis, 1916.

LOBAR PNEUMONIA

Lobar pneumonia presents many different aspects of special interest today, from the activity of many workers and the encouraging progress already made. Through the work of Cole and his associates at the Rockefeller Hospital, we now know that the disease is not ordinarily due, as was formerly thought, to infection with strains of pneumococci commonly found in the mouth, but to fixed types of pneumococci, recognizable by agglutinative, immunologic or cultural tests in about 80 per cent. of the cases, and to strains indistinguishable from the ordinary mouth organisms in the remaining 20 per cent. It has also been shown that these fixed strains of pneumococci have a limited distribution, being found in patients with lobar pneumonia and in the mouth sputum of healthy persons intimately in contact with pneumonia patients. Although further observations on the distribution of the fixed strains in health and disease are desirable, it seems probable that the infective agent in lobar pneumonia is more nearly restricted to the neighborhood of the pneumonia patient than has previously been thought. Inasmuch as the pneumococcus can be regarded as maintaining its existence only by passage from person to person, the spread of lobar pneumonia probably takes place by the intervention of healthy carriers between one patient with the disease and another, less often by direct contagion from patient to patient. If this is true, the more careful supervision of patients with pneumonia, including isolation and greater care in the handling of infected material, may be expected to diminish the incidence of the disease.

It seems probable that such acute respiratory infections as ordinary "colds," so-called influenza, bronchitis and sore throats play a not inconsiderable rôle as predisposing factors in the etiology of lobar pneumonia, since the highest morbidity from pneumonia coincides in point of time with those colder months of the year when the acute respiratory infections and exacerbations of the chronic infections are most prevalent and a definite history of acute and preceding respiratory infection can be obtained in a large proportion of all cases of lobar pneumonia. It is, therefore, to these simpler infections that we should turn our attention, and insist on a wider appreciation of their contagious nature and the means of prevention, greater caution against fatigue and exposure during their course, and isolation of the more severe types when possible.

Of the more technical matters in connection with the pneumonia problem, Peabody's[5] finding of a reduction of the oxygen capacity of the blood, which he ascribes to the formation of methemoglobin, in connection with severe infections with the pneumococcus, is of interest in partial explanation of the cyanosis so often seen in the course of lobar pneumonia. The importance of the varying degrees of acidosis which may be demonstrated in lobar pneumonia must be left for the future to decide. An adequate explanation of the crisis in pneumonia would go far toward solving many problems of the disease. The demonstration of the appearance of protective substances in the blood at the time of the crisis or during convalescence by Neufeld and Haendel,[6] and by Dochez[7] by means of animal experimentation is significant in this connection. The use of both

5. Peabody: Jour. Exper. Med., 1913, xviii, 1, 7.
6. Neufeld and Haendel: Ztschr. f. Immunitätsforsch., 1909, i, 168; Arb. a. d. k. Gesdhtsamte., 1910, xxxiv, 166.
7. Dochez: Jour. Exper. Med., 1912, xvi, 665.

pneumococci and serum from the same patient is of importance in their recognition. The nature of the protective substances is still unsettled, but Bull's[8] work suggests that to the agglutinins a greater importance must be ascribed than has hitherto been believed. It is doubtful, however, if the humoral factors entirely serve to explain the recovery, and important changes may be taking place in the lung itself. The involved region is to be regarded as an area which is in a measure isolated from other parts of the body. Proteolysis takes place within this region in consequence of an enzyme derived from the leukocytes. A local increase in the acidity, as indicated by the determination of the H-ion concentration of the involved region, may have an inhibiting effect on the growth of the pneumococcus, or be a favoring factor in the action of the proteolytic enzyme.[9] Beyond the infection and toxemia, the more immediate cause of death in pneumonia has been the subject of investigation. Newburgh and Porter[10] have shown that neither the heart muscle nor the vasomotor center is functionally impaired in pneumonia. Newburgh, Means and Porter[11] have demonstrated that there is impairment of the respiratory mechanism, as indicated by a greatly diminished reaction to carbon dioxid, and that this depression of the respiratory mechanism may be prevented by section of the vagus nerves.

In the specific treatment of pneumonia with quinin and with serum, there is a hopeful prospect of success. Since Morgenroth and Levy's experimental investigation of the chemotherapy of pneumococcus infections, further studies have been made with ethylhydrocuprein. This derivative of quinin protects mice against subsequent infection with the pneumococcus, and exhibits definite curative action in infected animals when administered early in the course of the infection. A striking pneumococcidal action is observed in vitro in very high dilutions. Moore and Chesney[12] have demonstrated inhibition of the growth of pneumococcus in the separated serum from patients who are given the drug. The dose should not exceed 1.5 gm. in twenty-four hours. A collection and summary by Leschka[13] of reported cases of pneumonia treated with ethylhydrocuprein showed that in 204 cases in which this treatment was used within the first three days, the mortality was only 5 per cent., while of 119 cases in which it was employed after the first three days, the mortality was 20 per cent. Transient amblyopia is observed in a small proportion of the cases. Among the last fifty cases of pneumonia due to infection with Type I pneumococcus at the Rockefeller Hospital and treated with the homologous serum by Cole, only two patients have died.

305 Beacon Street.

8. Bull.: Jour. Exper. Med., 1915, p. 457.
9. Lord: Tr. Am. Soc. for Clinical Investigation, May 8, 1916.
10. Newburgh and Porter: Jour. Exper. Med., Aug. 1, 1915; Am. Jour. Physiol., August, 1914.
11. Newburgh, Means and Porter: Boston Med. and Surg. Jour., March 30, 1916.
12. Moore and Chesney: Proceedings of the Society of Serology and Hematology, New York Jour. Immunol., 1916.
13. Leschka: Berl. klin. Wchnschr., Nov. 11, 1915.

Necropsies and the Law.—The scientific value of autopsies and their corrective influence on surgical diagnosis and treatment are such that every hospital should appoint a member of its medical or administrative staff to assist in procuring them, and should also take an active part in the movement to obtain more liberal autopsy laws.—S. S. Goldwater, M.D., *Modern Hospital*, November, 1916.

A COMPARATIVE STUDY OF SALVARSAN AND NEOSALVARSAN IN THE TREATMENT OF SYPHILIS*

WILLIAM B. TRIMBLE, M.D.
Professor of Dermatology and Syphilology, University and Bellevue Hospital Medical College; Attending Physician, New York Skin and Cancer Hospital
AND
JOHN J. ROTHWELL, M.D.
Instructor in Dermatology and Syphilology, University and Bellevue Hospital Medical College; Assistant Physician, New York Skin and Cancer Hospital
NEW YORK

In the recent past a rumor has been circulating that neosalvarsan is not so potent or efficient a remedy for syphilis as old salvarsan. This has gained credit especially in the city of New York and its environs. How or where this apparently unverified report had its inception is a mystery; it seems that the chief mode of dissemination has been by word of mouth, as very few substantiated statements regarding the comparative value of the two products can be placed.

Whenever a medical colleague has made the statement that he thought the new salvarsan not so good as the old, and the usual "why" was put to him, the usual answer was that "somebody told him so."

The writers of this article must confess now, though the work has been done with minds open to conviction, that they knew from experience that there was practically no difference in the therapeutic efficiency of the two products. If possible they know it better now. This knowledge, however, was based on purely clinical grounds, as up to this time no careful comparison on a given number of cases had been made by them in order to observe the effect on the complement fixation reaction.

Eventually, curiosity became sufficiently aroused, and since the facilities in the dermatologic department are splendid for this class of work, both as regards material and equipment, the study was begun.

The work was started on Jan. 1, 1915, and it was intended that it should progress until Jan. 1, 1916, exactly one year. Unfortunately the supply of salvarsan and neosalvarsan became exhausted; therefore the work was curtailed, and so it really extends over a period of only seven months. On the former date the following order was given to the department of dermatology:

For the purpose of comparison of the clinical and serologic results of salvarsan and neosalvarsan administration, beginning Jan. 1, 1915, Dr. Hailperin's division will administer neosalvarsan, and Dr. Cherry's salvarsan (old salvarsan) under the following general procedure:

1. Secure an original Wassermann.
2. Administer no preliminary specific treatment.
3. Inject intravenously one-half dose of selected drug.
4. Secure blood for Wassermann examination before administration of second intravenous injection, and then inject full dose of selected drug.
5. Repeat procedure No. 4 for the occasions of the third and fourth intravenous injections.

* From the Dermatological Department of the University and Bellevue Hospital Medical College.
* Read before the Section on Dermatology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.
* Because of lack of space this article is abbreviated in THE JOURNAL by the omission of the tables. The complete article appears in the transactions of the section and in the authors' reprints. A copy of the latter will be sent by the authors on receipt of a stamped addressed envelope.

6. After the fourth (or last, whatever its number) injection, begin with mercury.

The idea is to discover how quickly a negative Wassermann is secured, its permanency and the clinical results.

The report is based on the treatment of 110 patients to whom 397 injections were given, and on whom 337 Wassermann tests were performed. This number of cases to the clinic seems small, but it is ample from which to draw conclusions. The University and Bellevue clinic is very rich in syphilis, and the moderate number furnishing the basis for this paper is due to two reasons: first, the exhaustion of the supply of salvarsan; second, the class of patients can ill afford to pay the price of the drug; therefore only a small percentage can take advantage of the treatment.

All the stages of syphilis, primary, secondary and tertiary are represented, as will be seen by the accompanying table. Nearly all were examples of cutaneous and mucous membrane syphilis. In the series there was one case of primary syphilis with a negative Wassermann reaction, which will be referred to later. A large percentage of the patients had four injections; in fact several were carried up above this number, six, seven, eight and nine injections being given. On the other hand, a few ceased their visits to the clinic before the course was finished, some of them taking three, some taking two and some taking only one injection. The majority, however, took the full course, and the conclusions are founded on this group. The classified table gives them in detail.

The method of administration was the usual one and can be dismissed in a few words. Freshly distilled sterile water was always used. The salvarsan, after being neutralized with a 15 per cent. sodium hydroxid solution, was administered in 150 c.c. of water; the neosalvarsan was given in 50 c.c.

The intravenous puncture method was always employed, and the solution allowed to flow in by gravity. The dosage, as can be seen by the directions given to the clinic assistants, was for the patients taking salvarsan 0.3 gm. as the initial treatment and 0.6 gm. at the subsequent injections.

For those taking neosalvarsan 0.45 gm. was given at the initial treatment and 0.9 gm. for the last three. All injections, with few exceptions, were given at intervals of one week.

In every case mercurial treatment was instituted as soon as the last arsenical injection had been given.

One group of patients was put on intramuscular injections of mercury salicylate, beginning with 1 grain, and going up as high as 2½ grains in some instances.

The other group was treated by mouth administration, some getting tablets of mercuric chlorid in increasing doses, while others (tertiary cases) received the mixed treatment of the clinic, increasing gradually both the mercury and the potassium iodid.

Like all syphilitics, these patients were very careless concerning their attendance, ceasing their visits or becoming irregular a short time after the last salvarsan treatment. For this reason later Wassermanns, that is Wassermanns after several months of mercurial treatment, could not be procured except in a small number of cases. Should these data be secured later in a sufficient number of cases, they will be used in a subsequent communication.

In the beginning no intermediate Wassermanns were performed; two were made in each case so far as the patients could be managed; a preliminary one before treatment, the second following the last injection. This procedure was done in forty cases, when it seemed wise to make a slight change in the general plan. This change consisted in doing the complement fixation test four times in each case, and perhaps more if it could be accomplished. The first test of the four was only preliminary, whereas the second gave the reaction of the blood one week after the first injection; the third test gave the condition of the blood after two injections, and the fourth furnished this information after three injections had been given. Later Wassermanns were obtained whenever possible, but as said before, the patients were rather refractory.

As before mentioned, there were 110 patients comprising the study, sixty-nine receiving neosalvarsan and forty-one salvarsan; twenty-two patients taking neosalvarsan did not return for a subsequent Wassermann test; consequently they are not used in drawing the comparison. This leaves forty-seven patients forming the basis of the work with neosalvarsan. Of the forty-one patients receiving old salvarsan, five received only one injection each, after which they did not return for further examination and treatment; they are therefore excluded from the report. Deducting these, there remain thirty-six cases representing the work with salvarsan.

The plan of interpretation of results was to record the effects under three heads: (1) clinical; (2) reactive; (3) serologic.

1. Clinical: Without bias and from careful observation made in every conceivable way, one cannot see any difference in the therapeutic value of the two preparations. In all cases of syphilis reported in this study and those treated for years previously, regardless of the stage of the disease, the disappearance of the lesions has been as rapid and complete from the use of neosalvarsan as from the use of the older drug, salvarsan. In the minds of the writers this is a settled fact.

It was noted also, though it is an old story, that the mucous membrane lesions healed very quickly indeed, regardless of which salvarsan was used, and ever so much more rapidly than in the old days of mercury alone. There was also noticed another point, which has been mentioned by one of the writers and perhaps by others, that the papular type of the disease, both the miliary and the lenticular, fades very slowly; in fact the retrogression is just as slow following the use of the arsenical preparations as it was in former days from mercury.

2. Reactive: A short paragraph will be sufficient to record the experience with immediate ill effects. Nearly all patients taking salvarsan or neosalvarsan intravenously have reactions in some degree, be they ever so mild. Most of the patients taking as many as four injections had a mild reaction after one or two treatments. It was most unusual to see this mild reaction follow all four treatments. The number of reactions was much greater following the use of salvarsan than from neosalvarsan.

It is strongly believed by the authors that the quantity of water has some bearing on the constitutional disturbance following the treatments, though no attempt has been made to prove it. The greater number of reactions following old salvarsan may be due in part to the larger quantity of menstruum employed; in several of these cases the reaction was very severe. All the reactions following the neosalvarsan were mild in character. After all this, the by-effects of either

the old or new preparation are not considered of any serious import, and not at any time were they considered of enough consequence to interrupt the treatment.

3. Serologic: The effect on the complement fixation test was the main reason for this work, which has been long and laborious. By this it was expected to gain some valuable information; it has been gained, though in one sense it is very disappointing, not to say discouraging. Still, from the standpoint of comparing the two preparations of salvarsan it is of extreme importance. From the great number of injections (397) on 110 patients only seventeen negative Wassermanns were obtained, fourteen with neosalvarsan and three with old salvarsan. From this it is evident that both preparations gave very poor results, and it seems at first glance that the new salvarsan has a decided advantage over the old. This is not exactly accurate, however, as four of the negative Wassermanns from the neosalvarsan were obtained after six or more injections, whereas none of the patients treated with old salvarsan received more than four injections.

Discarding the neosalvarsan patients taking six or more injections and considering only those taking four or less, there would remain only ten negative results from the neosalvarsan and three from salvarsan, still giving the new preparation quite an advantage, but not so pronounced.

Looking at the tabulation from a different angle and considering only those patients receiving three and four injections, there were twenty-six neosalvarsan and twenty-eight old salvarsan cases; out of the former group ten negative blood tests were obtained, or 38 per cent., and from the latter, two negative bloods, or 7 per cent.

Confining the comparison still further and considering only the patients receiving four injections, it is seen there were twenty-two taking neosalvarsan and twenty-six receiving salvarsan. From this group of twenty-two neosalvarsan cases, nine negative blood tests were obtained, or 40 per cent., and from the group of twenty-six salvarsan cases two negative blood tests were recorded, a little more than 7 per cent.

In a certain small percentage of the remaining cases, after deducting the negative results, an impression was made on the serum reaction inasmuch as a positive reaction was produced. There were six such reactions in the neosalvarsan group and four in the series treated with salvarsan. In the whole study there were several examples of provocative Wassermanns, either beginning with a negative and producing a positive, or causing the reaction to become more intense; that is, starting with a one plus and producing a four plus.

Viewing the work from the standpoint of the stage of syphilis treated, one sees that there were six negative serum reactions obtained in the collection of cases in the secondary stage, all produced by neosalvarsan; eight negative reactions in the group of tertiary cases, six produced by neosalvarsan and two by salvarsan; and one negative blood reaction in the small group of hereditary cases, which was effected by salvarsan.

On close scrutiny of the tables it will be noticed that several of the negative Wassermanns were made negative only after several months of mercurial treatment.

One case of aborted syphilis will be observed in the tabulation. This was a primary case and is not included in the deductions, since the patient's Wassermann was negative at the beginning and has remained so ever since. It might be interesting to note that this patient had a small but rather typical initial lesion on the under surface of the prepuce; the incubation period was three weeks and the duration of the lesion two days. He had absolutely no secondary symptoms, and his Wassermann was negative; the smear showed a field with enormous numbers of spirochetes. Four injections of salvarsan were given to him, followed by mercury, and his serum reaction has remained negative up to this writing. It has been tested several times, and it is reasonably sure that a cure has been effected in this case.

It is desired to call attention to only two articles with the same theme as the objective; these have been fixed in mind for some time. There are probably others, but no attempt has been made to review the literature; in fact it was intentional on the part of the authors to avoid literature references, especially while the work was in progress.

The first of these articles, by Whitehouse and Clark,[1] states that in their work they obtained almost 20 per cent. more negative blood tests from the use of old salvarsan than they did from the new; and in their conclusions it is estimated that it will take five neosalvarsan injections to bring about the same result as four salvarsan injections.

The second article, by Nelson and Haines[2] of the United States Army, gives the results of a very careful piece of work, stating that the effect on the Wassermann reaction from the use of salvarsan is double that from neosalvarsan. From the series of patients receiving salvarsan 64 per cent. negative serum reactions were produced as against 33 per cent. from the patients receiving neosalvarsan. It is plainly seen that this report from the University clinic is at wide variance with the above authors, especially the latter. An explanation of the variance is beyond the writers of this paper. The work must tell its own story, with assurance from the workers that it was most carefully performed.

Practically all the points of consequence or interest have been covered, and there is little else to add except to draw a few conclusions. The work has been exacting and tiresome; whether it adds anything of special value to the sum total of information on this subject is left for others to decide. It demonstrates conclusively that there is no great difference in the therapeutic value of the two preparations of salvarsan. According to this report neosalvarsan is superior. It also presents a number of points of interest for future study, one of the most important of which is the following problem: If a patient's Wassermann reaction remains positive after four or six salvarsan injections, and only becomes negative three or four months after mercurial treatment has been instituted, how much credit is due the salvarsan and how much can the mercury claim?

Does the salvarsan have a latent effect? Does it produce a negative serum reaction some time after the last of a series of injections without the supportive treatment of mercury?

It is desired to state that the antigen used in the complement fixation tests was not strengthened or fortified by the addition of cholesterin.

1. Whitehouse and Clark: Jour. Cutan. Dis., 1913, xxxi, 633.
2. Nelson, Kent, and Haines, E. F.: Observations of the Results of Seven Months' Experience with Salvarsan in the Treatment of Syphilis, The Journal A. M. A., Dec. 26, 1914, p. 2277.

CONCLUSIONS

1. A course of four injections of either salvarsan or neosalvarsan is inadequate treatment.

2. A series of injections of salvarsan, either old or new, not followed by mercurial treatment, produces extremely few negative serum reactions.

3. From four to six salvarsan or neosalvarsan injections, even when followed by mercury, produce only a comparatively small percentage of negative serum results.

4. According to this study neosalvarsan is superior to salvarsan, being much easier of administration, less likely to cause severe reactions, and producing a greater percentage of negative results.

NOTES ON THE TEACHING AND TREATMENT OF SYPHILIS*

H. G. IRVINE, M.D.

Instructor in Dermatology and Syphilis, University of Minnesota Medical School

MINNEAPOLIS

In the campaign against syphilis, already well advanced in some parts of the United States, the rôle of the medical school should be one of the greatest importance. Not only are thousands of cases treated in their clinics and dispensaries, but on their teaching depends the ability of their graduates, who in turn should play an active part in eradicating this disease.

While much has been written on syphilis during the past few years, those of us who have much to do with this problem realize that ignorance of the subject is not limited by any means to the laity, and that a repetition of statistics showing its magnitude may well be tolerated.

PREVALENCE OF SYPHILIS

Osler has said that syphilis ranks next to tuberculosis, pneumonia and cancer from the standpoint of mortality. Gerrish[1] in 1911 estimated that 10 per cent. of the population of New York are syphilitic. Fisher[1] in 1913 estimated that 18 per cent. of the people of the United States are syphilitic.

Out of 111 cases admitted to a children's hospital in Boston, Lucas[2] found 31 per cent. syphilitic. In a children's hospital in Chicago, where syphilis was supposedly not admitted, Churchill[2] found 30 out of 102 patients had a positive Wassermann.

In the army Reasoner made a survey of one regiment showing 5 per cent. syphilitic, while Bartlett in a year's study found 10 per cent. of one command infected.

In medical wards in which patients are not admitted primarily for syphilis 30 to 40 per cent. of positive blood tests are found. Therefore it seems conservative to say that there are at least 10 million syphilitics in the United States. Church[3] estimates it at 20 millions.

TIME LOST BY SYPHILITICS

In this vast army the loss of valuable time must be an important economic factor. In a study of 4,134 cases occurring in officers of the Austrian army between 1880 and 1890 Mattauschek and Pilcz[4] found that up to 1912, 70.64 per cent. had succumbed to their syphilis or were chronic invalids. Patterson[1] made a survey of the hospitals of Chicago in an attempt to show the loss of time to syphilitics in their earning years.

TABLE 1.—TIME LOST BY SYPHILITICS IN HOSPITALS

Hospital	Year	No. Cases	Days Lost
Presbyterian	1911-12	46	961
Michael Reese	1912-13	107	1,562
Wesley	1912-13	52	593
Cook County	1912	917	19,389
Total		1,122	22,505

This shows that 1,122 patients lost 22,505 days, or an average of about three weeks per patient. Stokes[5] found that in 1912 there were 147,787 sick days in the navy on account of venereal diseases. This is equivalent to the disablement for five months of a dreadnought with a crew of 1,000 men.

ESTIMATED COST TO CARE FOR SYPHILITIC INSANE

Some idea of the cost in money may also be estimated. A number of investigators have made surveys of asylums. Ivey[6] among the negro insane in Alabama found 25 per cent. of 357 males and 29 per cent. of 349 females to have a positive blood serum. Watson[6] in the Oregon State Asylum found nearly 20 per cent. of 470 patients examined positive. Mitchell,[6] using the Wassermann test for over a year in the Warren State Hospital, found 18.5 per cent. positive among admitted females and 22.3 per cent. positive among admitted males. From these figures it is fair to assume that at least 20 per cent. of our insane in institutions are syphilitic. The U. S. Government Reports[7] for 1910 show 187,791 insane in asylums. In a former survey (1904) it was shown that the per capita cost was $160 a year. We can therefore estimate that over 30 million dollars was spent in 1910 by the state, and of this not less than 6 million went to care for syphilitics whose insanity might have been prevented.

COMPARISON OF CLINICS

Several years ago a committee appointed by the American Medical Association made certain recommendations regarding the teaching of syphilis; more recently a committee of the American Hospital Association made recommendations regarding dispensaries treating syphilis and gonorrhea. In substance the following points were emphasized: that there should be better hospital facilities for teaching and treating syphilis; that the present custom of teaching syphilis in various departments should be abandoned; that if practical it should be taught by itself or in conjunction with dermatology; that the dispensary should have a medical staff sufficient in number and training, enough well-arranged rooms, laboratory facilities, equipment of instruments and apparatus, clerical and sometimes nursing service, and social service.

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* From the Department of Dermatology and Syphilis, University of Minnesota Medical School.

* Read before the Section on Dermatology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Quoted by Patterson, James: An Economic View of Venereal Infections, THE JOURNAL A. M. A., Feb. 28, 1914, p. 668.
2. Quoted by Nichols, Henry J.: Syphilis as a Public Health Question, THE JOURNAL A. M. A., May 16, 1914, p. 1525.
3. Church, Archibald: Some Modern Views of Syphilis of the Nervous System, THE JOURNAL A. M. A., May 20, 1916, p. 1596.
4. Quoted in editorial in THE JOURNAL A. M. A., Nov. 1, 1913, p. 1636.
5. Stokes, C. F.: Boston Med. and Surg. Jour., 1914, clxxi, 33.
6. Quoted by Vedder, Edward B., and Hough, W. H.: Prevalence of Syphilis Among the Inmates of the Government Hospital for the Insane, THE JOURNAL A. M. A., March 20, 1915, p. 972.
7. U. S. Government Reports for 1904 and 1910, Insane in Public Institutions.

With the foregoing as a basis let us compare ten Class A schools which the writer recently visited. Only two have special departments for teaching and treating syphilis, although at three others syphilis is practically controlled in the department of dermatology and syphilis. At the other five syphilis is taught and treated in all departments. In this number, it is customary for skin syphilis to be sent to the dermatology, initial lesions to the genito-urinary department, eye lesions to the eye department, etc., and no effort is made after the diagnosis is settled to refer or transfer these patients to any one clinic where they will get routine treatment. This can result only in both improper and conflicting teaching and poor treatment. At five colleges the syphilis or skin and syphilis department has its own laboratories in which Wassermann tests and spirochete examinations may be made. At the other five these examinations are made in the general laboratory. Under the latter condition it is reasonable to believe the results are not so good, spirochete examinations are not immediately available and Wassermann tests are done only once or twice a week.

Seven colleges furnish sufficient room adequately and decently to handle patients, but not all of these have sufficient assistants and equipment to maintain a thoroughly well-kept record. At only four colleges are beds available for syphilis, although at three others patients can be put into municipal hospitals and remain under control of the men in charge of the college clinic. This means the opportunity of confining very infectious patients until the symptoms can be cleared up; at the other three, patients must necessarily be allowed to go their way infecting others as they please, for the two or three weeks necessary to sterilize the lesions.

At six of the clinics some one of the arsenical preparations is given as a routine, provided the patient is willing and able to pay for it. At three it is given only in selected cases as a routine, and in one, only to clear up symptoms.

In only one clinic is emergency salvarsan available; here it is possible, if a very infectious patient is admitted, at once to administer salvarsan, whether the patient can pay the cost of it or not. This is quite an important point, for many patients make but one visit and if they go away even with one dose of salvarsan a great deal has been accomplished toward clearing up the lesions.

At five schools a social service department is maintained, and an attempt made to follow up and control patients. At the other five no effort beyond that of the busy clinician is made to bring the patient back and no calendar record is kept. Without social service no clinic can hope to control its syphilitics anywhere nearly long enough to give adequate treatment.

In the matter of hours devoted to teaching it is very hard to make estimates, owing to the fact that in most schools syphilis is taught in all departments as it happens to come up. At Johns Hopkins, where a clinic on syphilis has been established this past year, eleven hours of lectures are given in the third year, and an elective of one unit in the fourth year comprising sixty-six hours in the clinic. At Harvard eight hours of didactic lectures on syphilis are given, and eight hours of clinical lectures, with a section clinic of eighteen hours. At Ann Arbor a course of twenty lectures is given on syphilis in the third year, followed by clinics on skin and syphilis in the fourth year.

These three are the only colleges in which a systematic course on syphilis is given; at the other seven a certain amount of time is given to syphilis in the skin or genito-urinary department, but no attempt is made to cover syphilis in its entirety.

RESULTS OF CLINICS

Unfortunately, I am unable to give statistics of all of these schools to show the results of their work. I can, however, give enough to show the difference in efficiency in some of these clinics.

Corlett[8] found that 165 patients admitted to the Lakeside Dispensary in 1911 did not return in 1912; this number was 49 per cent. of all patients admitted. They averaged 3.2 days' treatment. This study was made previous to the inauguration of their social service department, and I am sorry I have not figures at hand to show how much improvement has been made.

Dr. Ormsby[9] has been kind enough to furnish me with statistics of the clinic at Rush. Of 493 patients admitted in 1915, only 78 were carried into 1916. Out of 471 patients visiting the dispensary, only 32 per cent. were referred into the skin and venereal clinic and about 85 per cent. made fewer than ten visits. Recently this clinic has been entirely reorganized with very complete laboratory facilities and a social service department and there can be no question that the result will show the difference.

At Minnesota our records show that of 179 syphilitics admitted to the department of dermatology and syphilis during 1915, only forty-nine were carried into 1916, a loss of 72.6 per cent. Of the 130 patients lost, sixty-two had active lesions on admission, but it is estimated from the case records that about 60 per cent. of these had treatment enough before leaving to clear up the lesions. This means that 40 per cent. of the patients who left took their active symptoms with them. About 70 per cent. of the patients made fewer than ten visits, although the 179 averaged 7.7 visits. The average treatment received by these patients was 10.18 injections of mercury, 27 inunctions and 2.2 doses of neosalvarsan.

Since this survey was made our clinic has been moved into larger quarters, where patients can be very much better taken care of. Also, one of the clinicians is attempting to see every syphilitic patient every time; this personal contact undoubtedly helps to retain patients. Social service, with a follow-up system, has been started and the results already attained have made a marked decrease in our percentage of lost cases, a very clear demonstration of the value of this department. Furthermore, not a case under treatment when this service was inaugurated has passed out of control in the period of two months' operation. Compare the foregoing figures with those at Harvard, where there is a clinic for syphilis alone and a most efficient social service.

The report[10] just issued shows that of 1,118 new admissions in 1915, less than 10 per cent. were lost. Of a total of 3,358 patients making 18,063 visits, 9.6 per cent. were lost. The result that any competent staff might obtain in a well-equipped clinic is quite

8. Corlett, W. T.: Syphilis in the Curriculum of Medical Schools, Jour. Cutan. Dis., 1914, xxxii, 117.
9. Personal communication to the author.
10. Tenth Annual Report of the Social Service Department of the Massachusetts General Hospital, p. 16.

apparent; there should not be a difference of from 60 to 70 per cent. in efficiency between the schools covered in this brief survey.

CONCLUSIONS

Syphilis, from a sociologic, economic and mortality standpoint, is one of the greatest problems before our profession.

Physicians have the opportunity to take the initiative in stamping out this disease and should not wait for outside organizations to force it on them.

Medical schools have a double opportunity to do their share, first, by adequately treating the patients coming to their dispensaries, second, by furnishing such instruction to their students that they also may be depended on to treat syphilis correctly.

The majority of schools have competent men in charge of this work, but results in many cases are not obtained on account of the school not furnishing sufficient assistants and adequate equipment. The prevalence of the late manifestations of syphilis is obvious proof that the profession has not treated syphilis adequately; there is no excuse for a continuance of these methods.

601 Syndicate Building.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. REASONER, COLE, SUTTON, WILE AND ELLIOTT, SCHAMBERG, KOLMER AND RAIZISS, TRIMBLE AND ROTHWELL, AND IRVINE

DR. WILLIAM ALLEN PUSEY, Chicago: I was very much interested in Dr. Cole's paper on extragenital chancres, and when he mentioned the many sources of extragenital infections I was reminded of one source of infection which had been brought to my mind by a case occurring in a laryngologist, and it is of sufficient importance to call laryngologists' attention to the danger. This was a case almost certainly contracted by the involuntary testing of the temperature of the laryngoscope on the back of the hand after it had been introduced into the mouth of a syphilitic patient. There happened to be an abrasion at the point of contact and the laryngologist came to me with a chancre at the site a couple of months afterward. Many extragenital chancres are so atypical that they are apt to go unrecognized, and I am sure among physicians such unrecognized extragenital chancres are a source of some of the cases of syphilis without the history of a chancre. Within a few weeks I have seen a chancre on the hand of a physician which would have escaped recognition and the patient would never have known he had syphilis until something developed later, if it had occurred in the days before we could demonstrate the spirochetes, or had the Wassermann reaction. In my experience in private practice chancres of the lip have not been nearly as frequent as they are in statistics. Dr. Cole called attention to the importance of wearing gloves when examining syphilitic patients. I think a much more practical safeguard is to be careful to seal up with collodion abrasions and fissures about the hands. It is not practical to have rubber gloves always on the hands when examining syphilitic patients. This is especially true of dentists, who are most exposed to this danger. The safeguard which is practical, and which we should all avail ourselves of, is to avoid breaks in the epidermis as far as possible, and to seal them up immediately when they occur. While I hold no brief for the barber, I would mention the infrequency with which I have seen chancres about the face which seem traceable to the barber shop. It is surprising that they are not more frequent.

As to the rarity of the extragenital chancre in the negro, which Dr. Reasoner mentioned, I can recall at least two such cases, and I have seen nothing like three thousand cases of chancre in the negro, as Dr. Hazen has. The infrequency of this type of extragenital chancre in the negro would, I think, be very unsafe grounds on which to base any reasoning as to the insusceptibility of the negro. It may be due to the fact, for example, that the negro is not apt to spend any time in amatory preliminaries. As to the efficacy of treatment in preventing the tertiary manifestations of syphilis, I am quite in accord with Dr. Wile and Dr. Elliott, but I would call attention to the fact that their group of cases is not large enough and the time is too short to draw any deductions as to the superior value of present methods of treatment in preventing tertiaries over the older methods with mercury alone. I think they have omitted the most important cause of precocious tertiary manifestations at the present time; namely, insufficient early treatment with salvarsan. I was glad to hear the conclusions of Dr. Trimble and Dr. Rothwell that they found that the effects of salvarsan and neosalvarsan were the same. That was in accord with my impression.

DR. UDO J. WILE, Ann Arbor, Mich.: We must admit that certain strains of spirochetes have a predilection for certain tissues. Bacteriologically, we have the analogy in the streptococcus, different strains of which give rise to different forms of streptococcus infection. Morphologically, I have been unable to satisfy myself that there are any differences between the so-called neurologic strain and the strains which invade other parts of the host. The supposed morphologic differences are due to the physical changes of the organism in accordance with the medium in which they are studied. A point of interest in connection with the production of the experimental chancre is, that it is not necessary to have a nodule in the testes of the animal in order to prove infection. Within the last year, I have been able to inoculate six out of nine rabbits with the spinal fluid of two cases with general paresis, three of acute cerebrospinal syphilis and one of tabes dorsalis. In one of these cases spirochetes were found in the testes of the rabbit as early as the third day after inoculation; in the remainder the organisms were found within five days after inoculation. In none of the cases, however, did nodules ever develop in the testes. The spirochetes remained present for one month, then they disappeared, returning after a few days, then disappearing again completely. As no organisms were demonstrated in the spinal fluid itself before inoculation it occurred to me that they might have existed there in a resting stage. Their transference to the testes allowed them to develop in this favorable soil for a short time, after which they again lapsed into a resting stage. As to the teaching of syphilis, we can never hope to develop in this country syphilologists of the type of Ricord, Fournier, and Hutchinson until our investigators have the opportunity of familiarizing themselves with syphilis in all its stages. We certainly can profit by the help of the other special departments but the syphilographer today should be an internist, should know more than a little about neurology; he should be able to examine the fundus of the eye and be well posted in other fields of medicine in order to recognize, treat and teach syphilis intelligently.

DR. WALTER JAMES HEIMANN, New York: The crowning outrage in medical education in this country is the teaching of dermatology including syphilis. The following is an outline of how the subject is taught in a Class A institution in New York, of which I am in a position to speak with authority. Syphilis in all its forms is treated in the dermatologic department, is supposed to be taught in the genito-urinary department, and is actually taught in a coordinated manner nowhere. Twenty-eight hours are allowed for this alleged course. This state of affairs is typical enough of all but three or four of our undergraduate schools. The most serious aspect of syphilis is the fact that it attacks youth, and unless properly understood and treated persists throughout life. Thus we as dermatologists should make ourselves heard in protest against slovenly methods of instruction. To attempt to teach dermatology in twenty-eight hours in the last year of a medical course is absurd. The average student does not know what a chancre looks like—not to speak of the spirochete. He knows nothing of the practical application of the Wassermann reaction, and has not learned from any one instructor consistently how to treat the disease. He does not know the therapeutic function of salvarsan or the difference in action between salvarsan and mercury. His confusion is almost worse than his ignorance, because in spite of his degree of Doctor of Medicine he is unprepared, on

graduation, to make a diagnosis or prognosis of the disease, or to treat it intelligently. In my opinion the study of syphilis should be concentrated in a single department, preferably the dermatologic because dermatologists have devoted most time to the subject, and are at present didactically best equipped. Dermatologists have been pushed into the background in medical schools, and frequently are not even faculty members in spite of the fact that they treat and should teach one of the most serious known diseases, and one which if understood by physicians at large would be readily curable, but which if unintelligently managed leads to the direct consequences.

Dr. Philip Kilroy, Springfield, Mass.: I do not think there is any need to add to the already existing fear of the so-called accidental infections with syphilis. Cleanliness is desirable and the safeguards to which Dr. Pusey called attention are admirable, but I do not think anybody ever contracted syphilis in a restaurant, or in a telegraph office while handling dispatches, or from a soiled towel. I think the danger of infection from these indirect or impersonal sources is so slight as to be almost negligible.

Dr. L. H. Cook, Bluffton, Ind.: About fifteen years ago I saw an instance in which syphilis was spread by osculation. A young man came to my office with a sore on his lip. I recognized it as a chancre and cautioned him. Six weeks later a young woman came to me with a similar lesion on the lip, and on questioning her I learned that she associated with this young man. A couple of months later her two younger brothers, perhaps 7 and 9 years old, visited my office, and both of them had a chancre of the mouth acquired either through kissing their sister or using the same tableware. I should like to have some one tell us when we can say our syphilitic patients are well.

Dr. Samuel E. Sweitzer, Minneapolis: Dr. Cole's paper reminds me of two initial lesions that I saw recently in physicians. One was at the inner canthus of the eye, and it had remained unrecognized until secondary symptoms appeared. The other was on the septum inside of the nose. Referring to Dr. Wile's paper, I have for many years been interested in the subject of tabes and I have never met with a tabetic who had gummatous lesions. In connection with the paper of Drs. Trimble and Rothwell I believe that the reactions after both salvarsan and neosalvarsan are greatly increased when they are given with large amounts of water. I use 10 c.c. for neosalvarsan and 20 c.c. for the old salvarsan. Social service work in connection with cases of syphilis would have been instituted long ago in Minnesota, but we did not have sufficient funds. We are now using this system to our great advantage. In the treatment of syphilis in Minneapolis the patients are referred first to the dermatologic department in the hospital, and then, if the eye, nervous or other complications occur, the patients are referred to the proper specialists, which I think is very desirable when local lesions connected with any particular organ develop.

Dr. Richard L. Sutton, Kansas City, Mo.: With regard to the possible cause of dyschromia, a recent letter from Prof. B. M. Allen, of the University of Kansas, is of interest. Dr. Allen writes:

"I much appreciate your letter of May 17 relative to my work on the removal of the pituitary glands from tadpoles. I am only sorry that my work has not gone far enough to give you very conclusive data. The operations were performed upon very young tadpoles. The anlage of what corresponds to the anterior lobe of the pituitary gland was removed while still growing in from the surface ectoderm. As a result I found that the black pigment cells were contracted to mere points while the silvery colored cells (iridiophores) became gradually expanded. Upon superficial examination I do not think that there was any change in the relative number of these two cells, but there is a tremendous change in their relative expansion. I have controlled this experiment carefully in several ways. In the first place, of many lots of operated tadpoles, two or three were found in which this color change had not taken place. Upon sectioning these I found that I had failed to completely remove the pituitary tissue, while sections of the silvery tadpoles exhibited no trace of it. Furthermore, the experiment was controlled by making the proper incision but leaving the pituitary anlage intact. In these there was no color change. Aside from the question of the modification of these pigment cells, the results were interesting in that the tadpoles showed that there is a marked inhibition in the development of the tadpole. This becomes evident about twelve days after the operation, and most of them die within the next two weeks. I have abundant material along these lines and hope to reach quite satisfactory detailed results."

Dr. Franklin W. Cregor, Indianapolis: In the institution with which I am connected, we teach and treat syphilis in the department of dermatology. That there may be some standard, and because the patients must pay for the drug, we insist on at least two doses of salvarsan or neosalvarsan. Patients then receive courses of mercury, the amount of which depends on the weight of the patient. These are followed for a period of eight days by iodids, then a rest period, amounting to seven courses over a period of three years. Wassermann tests are made after every second course. Patients are placed in the social service and are told that, if they do not return when they are advised to do so some one will be out to see why they have not returned. Our records are kept carefully and we hope ere long to make report of the work accomplished. Experience teaches us that safety comes only after intensive treatment over a long period of time, and that the great fault of the profession is that they are too ready to compromise with the convenience of their patients and discontinue treatment.

Dr. H. C. Baum, Syracuse: I have long suspected that there were different strains of spirochetes and that these strains selected different tissues. I have under observation at the present time two men who infected their wives with syphilis and subsequently both husbands and wives developed syphilis of the central nervous system. In regard to extragenital chancres I am personally impressed with the fact that the common communion cup offers opportunities for the transmission of syphilis. I have under observation a woman who developed a primary lesion on the lip twenty-eight days after taking communion: she had not been away from home nor otherwise exposed to contagion. I also have in mind a young physician who was examining a syphilitic patient when the latter coughed and some of the expectoration struck him in the eye; he immediately washed the eye but about a month later developed a primary lesion near the outer canthus. I recall the case of a scrubwoman who worked in a brothel and developed a primary lesion of the eye. With Dr. Halstead I saw a primary lesion in the nose resulting from the use of an unclean nose speculum employed by another physician. I have also seen recently a dentist with a primary lesion on the finger. Another recent case was that of the daughter of a boarding mistress who developed a chancre of the lip three weeks after she had been kissed by a middle-aged boarder.

Dr. David Lieberthal, Chicago: The largest majority of cases of primary lesion on the fingers occur not infrequently in medical men and midwives. I wish to record a case of extragenital chancre, occurring on the calf of the right leg after a skin graft, which was made to cover a defect caused by the application of a hot-water bag. In connection with the late manifestations of syphilis, the observations of Dr. Wile support the findings and conclusions of Fournier. The less intensive the treatment, the greater the changes of late manifestations. In drawing conclusions and tabulating our cases we must have reliable material. The testimony of dispensary patients, as regards the value of treatment, is rather worthless, as most of them cease their visits as soon as they are freed from outer lesions. The same is true of a certain class of private patiants. The other group of private patients, however, who remain faithful to the last, give the best opportunity to ascertain the true results. In twenty-two years of experience with the latter class where treatment was instituted at an early stage and continued intensively over a long period of time, I observed no case of late syphilis. These patients remained well clinically as well as serologically.

Dr. Harold N. Cole, Cleveland: A number of cases of chancres about the eye have been reported, and medical men should always be careful about rubbing their nose or eyes with the examining finger or allowing patients to cough in their face. I have only seen one case of extragenital chancre in the negro, the patient being a man who used his hand in

cleaning urinals. I do not see why negroes should not be subject to extragenital chancres as often as we are. I agree with Dr. Irvine that syphilis should be taught by the dermatologist, who sees these cases early and recognizes them early; furthermore, the subject should be taught in a single department in order to follow up these patients intelligently. Medical schools spend weeks and months in teaching the diagnosis and treatment of syphilis in the late stages, when little can be done; whereas the same amount of time, used in the earlier stages, would be of infinitely more value.

DR. JAY FRANK SCHAMBERG, Philadelphia: Concerning the comparative value of salvarsan and neosalvarsan, it is very difficult to draw conclusions unless the series of cases was extremely large. One case of syphilis is not like another. The location of the spirochetes in the tissues and their accessibility to medicaments are important factors, influencing the therapeutic results: most of the clinical reports on the comparative value of salvarsan and neosalvarsan are favorable to the former. My own opinion, based on clinical impressions, and on the results of the use of the two drugs in experimental trypanosomiasis, is that salvarsan is very distinctly superior to neosalvarsan.

DR. JOSEPH A. ELLIOTT, Ann Arbor, Mich: One of the points we wish to emphasize in this paper is the tendency for late accidents to occur following poor treatment, of which the pill treatment is an excellent example. During the months of October and November, when our supply of salvarsan was very limited, and we were forced to limit the dosage, we had a few accidents, thus showing that even salvarsan, unless given properly and followed by thorough mercurialization, may prove inefficient. What constitutes efficient treatment depends on the individual case. In all cases, however, we try to give at least five or more injections of salvarsan, followed by prolonged mercurialization either in the form of injections or inunctions.

DR. JOHN J. ROTHWELL, New York: In our work we had in mind the thought that Dr. Schamberg expressed just now; we knew that our cases were not all of the same variety, and our chief object in presenting this paper was to stimulate others to take up this work so that a sufficient number of cases might be collected on which to base definite conclusions.

DR. H. G. IRVINE, Minneapolis: I am not prepared to say that the subject of syphilis should be taught by one man, but in one department. The dermatologist can call to his assistance men who specialize in other lines, who can discuss special phases of the subject, but the course should be so organized that the student will get a clear idea of the disease as a whole. I do not agree with those who believe that syphilis cannot be controlled. We control tuberculosis and other diseases and why not syphilis? If necessary, the aid of the police could be invoked. They have certainly gone far toward controlling it in Boston.

Chlorosis of Pineapples.—An observation made on pineapples may prove of some value to the human. M. O. Johnson of the Hawaiian Experiment Station recently found that the chlorosis of pineapples occurring on highly manganiferous soils can be cured by spraying the leaves with ferrous sulphate. Hence it is a manganese induced chlorosis. There is also a lime induced chlorosis met with in Porto Rico. The lime chlorosis was shown to be due to a lack of iron in the plant, caused by the carbonate of lime diminishing the availability of iron in the soil. At first it was not known whether the chlorosis was due merely to a lack of iron or to a lack of iron combined with a large amount of lime in the plant. Recent work seems to show that it is merely due to a lack of iron. Now the manganese chlorosis may be similar to the lime chlorosis if the manganese acts similarly in merely diminishing the availability of iron in the soil. The recent discovery of Johnson shows that this may be possible. It is possible that the manganese chlorosis is due to a deficiency of iron combined with a direct toxic effect of the manganese. The application of ferrous sulphate to the leaves apparently has a more permanent effect on the manganese plants than on the lime plants. The treatment must be made frequently to maintain the plants in a green and vigorous condition.—*Science*, Dec. 15, 1916, p. 855.

THE SPHENOID SINUS

A REVIEW OF THE PAST WITH SUGGESTIONS FOR THE FUTURE *

HANAU W. LOEB, A.M., M.D.
ST. LOUIS

The study of the sphenoid sinus is most fascinating and presents many opportunities. Located as it is on either side of the midline of the under side of the head, often extending far to the opposite side, its size and shape vary with respect to its fellow more than any bilateral organ or cavity of the body. This appears even more remarkable when its relations are considered to such important and fairly constantly placed structures as the cranial cavity, cavernous sinus, internal carotid artery, optic nerve, optic chiasm and pituitary body. The bony coverings of the sinus and the bony outline of other portions of the sphenoid and the adjacent bones give no indication of the extent or shape of the sinus. Even the position of the nasal opening, as I have shown, is subject to wide variation, while the septum between the two sinuses is conspicuously inconstant in form, size and position.

The operative work done so successfully nowadays in spite of the distance from the anterior nares adds to the interest which we feel for the cavity, while the danger, though slight, of operating so close to such vital structures as the cavernous sinus, internal carotid arteries and higher brain centers gives it a zest to which only the timid will not respond.

Our understanding of the sphenoid has been of recent growth, but it has developed by leaps and bounds. The remote past contributed but little to this knowledge. The ancients as well as the writers of the middle ages understood the sphenoid sinuses, like the other accessory sinuses of the nose, as being mere accidental cavities with the function of relieving the head of the weight which solid bone would entail. They were, however, considered of great importance by reason of their ability to drain the brain of its humors, or of their disposition to remove pus and other fluids from the brain cavity. Even Hippocrates suggested that pus in the nose came in part from the sphenoid sinus, although he did not know the precise pathway it took in its journey.

Schneider's observations, which excluded the nose from any communication with the cranial cavity in life, brought an end to the supposed brain-purging function of the nose and gave rise to speculation as to the purpose of the individual sinuses.

The sphenoid sinus took but little part in the hypotheses that were advanced, either from the fact that little was known as to its extent and relation to the nose, or because no explanation, reasonable or unreasonable, could be given for its existence. It is quite obvious, therefore, why so little attention was paid to it for all these years and why, for instance, Hyrtl in 1882 stated that the sphenoid sinus was entirely beyond the range of manual and instrumental attack.

But the wonderful work of Zuckerkandl published the same year was destined to change this entire conception of the subject, for he gave the study of the normal and pathologic anatomy of the accessory sinuses of the nose an impetus which it retains even to this day. His findings as to the sphenoid are particularly of value

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in that he established the usual relation of the sinus to the optic nerve. Very little has been added to this work. We may mention Onodi, who demonstrated the relation of the sphenoid and posterior ethmoidal cells, the writer who showed the variation in size and shape and the vulnerability of the optic nerve when the sinus opening is high in the upper third of the anterior wall; and Sluder, who made extensive studies on the relation of the sinus to the various cranial nerves.

The investigations of Zuckerkandl were soon followed by determined efforts to utilize them for therapeutic purposes, although it was some time before effective measures were adopted. The first article in which the sphenoid sinus is mentioned in the caption appeared in 1886, by Berger and Tyrman.[1] Even then they supposed that the suppuration was always due to syphilis, scrofula or traumatism.

Schaeffer, who was the first to open the sphenoid, in 1885 contributed a great deal to the development of the knowledge of this cavity, while Berger and Tyrman, Rolland, Heryng, Rualt, Quénu, Clark, Cozzolino and others wrote more or less extensively during the first ten years following the publication of Zuckerkandl's monograph. Schaeffer and his followers endeavored to secure drainage of the sinus by simply enlarging the natural opening, although Schaeffer himself attempted to extend the enlargement to the floor of the cavity. Killian in 1900 called attention to the frequency of the coincident involvement of the last posterior ethmoid cell and the possibility of securing a larger opening by operating through the pars ethmoidalis. However, it was Hajek who demonstrated by his painstaking investigation and observations that the best results could be obtained only by a resection of both the pars ethmoidalis and the pars nasalis of the anterior wall of the sinus. Since these publications little has been done except to confirm them and to establish a somewhat more definite indication for the operation.

The operative attack of the hypophysis by way of the sphenoid sinus, which has been developed during the past few years, has been accepted as the most satisfactory plan, particularly when removal of the bony wall alone is required. The technic is easy for experienced operators on the nose and the results are sufficiently good to justify the interest that has been manifested in it. The development of roentgenographic studies in connection with the pituitary question has been satisfactory, though it must be admitted that roentgenography has so far been of little value in the diagnosis of sphenoid empyema.

We have thus seen that the entire progressive part of our knowledge of the sphenoid sinus has occurred within the past thirty-five years, while its surgery was practically an unknown quantity thirty years ago.

We are very apt to be filled with pride when we contemplate the development of a new line of work which has achieved as much as that of the sphenoid in such a short time, particularly in anatomy, diagnosis and surgery. In order that we may not feel too well satisfied or despair that everything has already been discovered, it may not be amiss to view some of the problems which remain unsolved in connection with this subject.

1. Among the very first that should attract our attention is the cause of the excavation of the sphenoid body, resulting in the formation of these sinuses, with such a variety in shape and size. The pressure of the air in the nose in breathing might appear to be the explanation, especially as the changes take place during the air-breathing stage of the individual. So far experiments with this in view have added nothing toward its solution; there is still plenty of opportunity in this direction.

2. Associated with this question is that of the relation of the posterior ethmoid cells to the sphenoid. Why does the last posterior ethmoid cell sometimes project itself into the sphenoid and replace the corresponding sphenoid sinus? I have shown that this occurred twice in the thirty sphenoid sinuses studied by me, and that in those instances the optic nerve ran for a considerable distance along the external wall of this ethmoid cell instead of having only the slightest relation at the postero-external angle of the cell. Is my surmise correct that under the former circumstances the optic nerve is more vulnerable to ethmoid infections?

3. What bearing has the sphenoid sinus on the cranial nerves in its neighborhood? Are they susceptible to the influence of purulent infections of the sinus?

4. The physiology of the sphenoid sinus is still almost an unknown quantity. Beyond its value as a means of decreasing the weight of the head without reducing the bone surface area, we have little to say, and this was held nearly 3,000 years ago. By the development of the sphenoid sinus from the nasal cavity there is a consequent increase in the respiratory mucous membrane. When shall we be able to answer the question as to what may be the purpose of this great extension of the nasal mucosa?

5. As to etiology, we are still much in the dark. We know that suppuration of the sphenoid may follow certain of the infectious diseases; we know it frequently follows acute coryza and suppuration in other sinuses; we know many varieties of pathogenic bacteria find their way into the cavity, but we do not know what selective agent accounts for the attack of the sinus at the specified time. We do not know why the sinus should escape infection when every necessary condition is present so far as our knowledge goes; at any rate the opportunity is abundant, the attack rare. No one needs, therefore, complain that etiologic problems are wanting.

6. The symptomatology of sphenoid sinus suppuration presents a wide range. In many cases practically no subjective signs whatever are present; in others the suffering is most acute. While this may be accounted for in part by the variation of the drainage, the explanation does not suffice for cases in which the symptoms fail to agree with the facility of drainage. We hear of an attack of blindness ascribed to sphenoid suppuration and relieved by appropriate treatment addressed to the sphenoid sinus, and we forthwith look to it as an explanation of eye symptoms of any character, provided they have no intra-ocular cause. We read of a case of acute mania due to suppuration of this cavity and we rush to tap the sinus in all cases of mania, whether there is suppuration or not.

What we need is to have some one determine the symptom basis so that a clearer line may be drawn between the symptoms due to the sphenoid and those which have some other origin.

7. Our best agents for diagnosis are cocain, the Killian speculum and the Holmes nasopharyngoscope. Roentgenography offers but little; we can make out the lateral bony boundaries of the sinus fairly well, particularly when we take advantage of stereoscopy. We can see it in the outline in some measure by an anterior

1. Berger and Tyrman: Centralbl. f. Laryngol., 1886.

view picture, but on account of its distance from the plate, we cannot determine the presence of pus, as in the case of frontal and maxillary sinuses. Who will find the solution for this problem?

8. We have not achieved the highest point in the surgery of the sphenoid. Notwithstanding the ease with which we resect the anterior wall, we still must submit to failures, even though many operations are followed by marvelous results. The suppuration continues in spite of our most earnest efforts. On the other hand, patients treated expectantly sometimes recover. Success, we may say, now depends largely on the judgment of the operator. Will not some earnest investigator place this on a basis more independent of the mere judgment of the operator than now obtains?

9. Who will so classify the chain of nervous symptoms, headache, etc., that sphenoid operations for their relief may be rational and not experimental? Truly there is a large field here for study and investigation.

10. We cannot fully account for postoperative accidents and results by what we know, nor are they always due to operative inefficiency. We need a great deal more light in this regard.

On the whole, it is manifest that we have not reached the utmost limits of knowledge by what we have accomplished in the study of the sphenoid sinus. For that reason I have endeavored to show, not how little we know, but how much we are to know.

THE SURGICAL TREATMENT OF CHRONIC MAXILLARY SINUSITIS *

WILLIAM E. SAUER, M.D.
ST. LOUIS

According to Jonathan Wright, Galen was the first to mention the maxillary sinus, but Brengar was the first to describe it. However, the first description of any real value was made by Highmore in 1651 and since then the cavity has borne his name. At the same time he reported a case of suppurative disease of the sinus. Mollinette in 1675 made a crucial incision on the jaw, and with a trephine penetrated the antrum and located an abscess. Meibomius, who died in 1655, invented the operation now known as the Cooper operation. Cooper described his operation in 1717. Jourdain, a Paris dentist, in 1765 reported a method of washing out the antrum through the natural opening. Grooch, an English surgeon, who died in 1780, and John Hunter in his treatise on the human teeth proposed perforating the antrum through its nasal surface. Wright states that in going over the history of the antrum and its diseases one will perceive that all recent procedures have been long anticipated.

The treatment of maxillary sinus diseases was apparently neglected; at least it did not receive the attention it had formerly. It received a new impetus in 1886 when Ziem pointed out that disease of this cavity was not only far from infrequent, but a common occurrence. Since then a number of operative measures have been devised.

The operations for chronic maxillary sinus disease may be divided into three classes: (1) those in which the cavity is attacked only through the mouth, as in the Cooper and Kuster operations; (2) those in which the cavity is attacked only through the nose, as in the Krause, Mikulicz, Canfield and Skillern operations; and (3) those in which the antrum is attacked through the oral and nasal cavities, as in the Caldwell-Luc and Denker operations.

The Cooper operation is employed only when a carious tooth or root is the etiologic factor; usually the second bicuspid or the first and the second molar are removed, the opening enlarged and smoothed with a drill, and drainage established by means of gauze or a specially devised tube or obturator, which is worn by the patient until the cavity is healed. The chief disadvantage is that if there are any marked pathologic changes in the sinus the process will not get well.

The Kuster-Desault operation consists of a free opening of the antrum through the canine fossa and curetting the walls of the cavity. This operation has been practically abandoned.

Of the intranasal operations, the simplest is the Krause-Mikulicz, which consists in the removal of the anterior third of the lower turbinate. The antrum is then punctured with a large trochar and thoroughly irrigated. The opening is enlarged by means of a punch forceps and packed with gauze. This packing is removed at the end of twenty-four hours. The patient can be taught to irrigate the cavity until healing has been secured. The advantage is its simplicity. The disadvantage is that if any marked pathologic changes are present, it will not suffice.

The Canfield operation, which is a modification of the Denker operation, to be described later, consists of the intranasal, submucous resection of the naso-antral wall under local anesthesia. A 1 per cent. solution of cocain is injected in front of the inferior turbinate; the needle is directed so that the solution is carried under the periosteum in the canine fossa. The lower turbinate and lateral wall of the nose are cocainized in the usual way. An incision is then made from the middle of the anterior attachment of the inferior turbinate down to the floor of the nose. This incision is made through all the tissues down to the bone. A small elevator is introduced and the periosteum elevated from the crista pyriformis externally toward the canine fossa, and internally toward the nose, including the mucous membrane covering the inferior turbinate and the lateral wall of the inferior meatus. The bony structure of the inferior turbinate is removed, and the antrum may then be opened by means of a chisel, trephine or rongeur bone forceps. Enough of the bone in the canine fossa, as well as the bony wall of the inferior meatus as far back as the posterior wall of the antrum, is resected. A large-sized ear speculum is introduced and the interior of the antrum is inspected. A flap of mucous membrane is turned into the antrum from the nose and the cavity is packed with gauze, which is allowed to remain from twenty-four to forty-eight hours. The after-treatment consists of touching subsequent granulation tissue with caustics. Healing occurs in from ten days to three months. The advantages of the operation are that there is very little disturbance following the operation; the sinus can always be inspected, and the process of healing noted; drainage is at the lowest possible point. The objection to the operation is the removal of the inferior turbinate.

Skillern has modified the Canfield operation in that, after cocainization, a perpendicular incision is made slightly in front of and above the anterior end of the inferior turbinate extending well into the floor of the

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nose. The incision should sever all the tissues down to the bone. A second incision is made directly back of this, meeting the first one above and below, so as to excise a spindle-shaped piece of mucous membrane. The periosteum is then raised from the crista both externally toward the canine fossa and internally toward the inferior turbinate until a sufficient portion of the bone is exposed. The antrum is now opened with a chisel and bone forceps by removing the crista pyriformis. The opening is enlarged by means of a trephine and frontal sinus rasp to any desired size. The cavity is then irrigated and packed with gauze saturated with a cocain-epinephrin solution and allowed to remain five minutes, after which it is removed and the interior of the cavity inspected through a hard rubber ear speculum. The nasopharyngoscope is used for inspecting the roof and other parts of the cavity which cannot be seen by direct inspection. By means of suitable curets all portions of diseased mucosa can be removed. After completing the operation the cavity is packed with iodoform tape. This is removed in from forty-eight to seventy-two hours. After its removal the cavity is cleansed by irrigation and lightly repacked with iodoform gauze. The treatments are continued every second day for from ten days to two weeks, when the packing is permanently discontinued. The irrigations are continued at intervals of about four weeks. In ordinary cases the patient is discharged as cured at the end of that time. In cases of long standing and in which large areas of mucous membrane are removed Skillern, after thoroughly cleansing and drying the cavity, injects into it solutions of silver nitrate varying in strength from 25 to 75 per cent. At times the opening has a tendency to close. This can be prevented by curetting the edges and applying a caustic. Skillern claims the following advantages for his operation: (1) the sinus can always be inspected; (2) the drainage is at the lowest and most accessible point, reached through the nose; (3) local applications directly under vision can be made to diseased areas which have proved resistant to treatment; (4) the inferior turbinate is not only preserved in its entirety, but it remains uninjured; (5) the operation is practically painless if the anesthetization is properly carried out; and (6) the period of healing is considerably shortened.

Of the combined oral and nasal operations, the Caldwell-Luc was for a long time considered the most radical procedure and was employed only in the most obstinate cases. The operation consists of making a large opening in the anterior wall of the sinus through the canine fossa, giving free access to the interior antrum. After all diseased mucous membrane has been removed, a large opening is made in the antronasal wall beneath the inferior turbinate; a portion of the inferior turbinate is also removed so as to procure drainage into the nose. A flap is made from the mucous membrane of the lateral wall of the nose and turned into the antrum. The cavity is packed with gauze through the nose. The oral wound is allowed to close primarily, some operators closing it with sutures; but this, in our experience, has been found unnecessary. The operation is usually done under general anesthesia. The employment of the intratracheal method of general anesthesia obviates the necessity of packing the posterior nares, as was formerly done, and in a great measure overcomes the objections to the employment of a general anesthetic in intranasal work. The operation can be done under local anesthesia when a general anesthetic is contraindicated.

In 1905 Denker brought forth an operation which is similar to the Caldwell-Luc, but much more radical. Denker removes the anterior antral wall, the lower portion of the angle formed by the junction of the anterior and nasal walls, making a common opening between the nose and the sinus anteriorly. A large part of the inferior turbinate is removed. Denker has since modified his operation, in that he leaves the inferior turbinate intact. In this operation the after-treatment is carried out in the same manner as in the Caldwell-Luc. The chief advantage of the Denker operation is that practically all of the sinus mucosa is under direct inspection. The only exception is the anterior superior angle. This may be seen easily with a postnasal mirror. It has the advantage of being more extensive and less difficult than the Caldwell-Luc, and in the majority of cases the convalescence is more rapid. The objections to the operation are that the nerve supply of the front teeth is interfered with and at times the tear duct is injured. Skillern mentions three cases in which stenosis of the duct followed. He also mentions three cases of osteomyelitis of the superior maxilla, with two deaths.

The Jansen operation I believe to be too radical and am of the opinion that equally good results can be obtained by simpler procedures.

The necessary specifications of a good method are a large opening or openings of sufficient size to permit thorough inspection and good drainage with the least disturbance of nasal function. This, I believe, can be accomplished by a modified Canfield, such as the Skillern, or a Denker, in which the inferior turbinate is left intact.

A most important consideration in estimating whether a radical operation must be resorted to is that of the primary or secondary character of the maxillary sinus involvement. The claim of Jansen that if one sinus is affected all are is not tenable. When, however, the antrum is a reservoir for ethmoidal or frontal sinus suppuration, or when its involvement is secondary to such suppuration and the trouble is not of too long standing, it is frequently necessary only to cure the primary trouble and then, at most, to handle the maxillary sinus by lavage. The causes of failure of the radical maxillary operations are frequently due to the overlooking of a decayed tooth or necrotic bone in the alveolar process as well as pathologic conditions in the nose and other sinuses.

The value of the Roentgen ray in discovering pathologic conditions of the teeth and maxillary sinus cannot be overestimated. We must also bear in mind the general condition of the patient. Here, as elsewhere, syphilis and tuberculosis must not be overlooked.

201 Humboldt Building.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. BECK, HURD, COTT, SKILLERN, SHAMBAUGH, IGLAUER, LOEB AND SAUER

DR. H. P. MOSHER, Boston: Dr. Skillern misunderstood my method of opening the front wall of the sphenoid. I do not enter the sphenoid through the ethmoidal part of the front wall. After uncovering the whole of the front wall of the sphenoid, entrance to the sinus is gained through the nasal part, preferably by way of the ostium. Dr. Skillern spoke of pushing the mucous membrane ahead as you attempt to get into the sphenoidal sinus through the ostium. I have had two such cases and in one the mucous membrane pulsated.

I have never used Beck's osteoplastic operation on the frontal sinus. Jansen's work prejudiced me against procedures of this class. The pathology in Dr. Beck's paper was most welcome.

Dr. Beck was favorably impressed with the Lothrop operation. I have done the operation once. There are many things which appeal to me about this operation. Men have been working on the superior nasal spine for years. Such operations have seemed to me to be working in the dark and I have never tried them. The great improvement introduced by Lothrop is that he opens the frontal sinus and works on the superior nasal spine by sight. The second new point about this operation is that both superior nasal spines are removed. In the operation which I saw Dr. Lothrop do it seemed to me that the opening in the front wall of the frontal sinus was too small. Given a large opening to work through, the Lothrop operation appeals to me, and I think it has a future ahead of it. Time will have to settle whether the opening made through the thick bone of the superior nasal spines will fill with scar tissue any faster or to a greater extent than the opening made by the Killian operation in the thin bone of the ethmoid labyrinth and the floor of the frontal sinus. The papers today have shown that there is more than one technic for exenterating the ethmoidal cells. The operator should take whichever one best fits his needs. As given in the papers today the approach to the ethmoidal labyrinth has been through the ethmoidal bulla. The point of attack which I have been accustomed to make is through the extreme upper anterior part of the middle turbinate. In performing the exenteration of the ethmoidal labyrinth I have reduced the special instruments employed to two, a Hammond mastoid curet and a small round tonsil punch about a centimeter in each diameter. Whether one works to the inside or the outside of the middle turbinate, ethmoidal operating is dangerous and always will be. Any one who does ethmoidal operating should have an acutely developed surgical conscience. In the cases of ethmoidal exenteration which I have not packed the majority have required packing later by the house surgeon.

Dr. C. G. Dwight, Madison, Wis.: Every man who has done any surgery along this line has his own technic; if not, let him master a technic that is considered safe and right. I have repeatedly left the concha media and middle turbinate as a landmark in doing ethmoid work. If you will enter at the upper anterior end of the middle turbinate with a Hartman forceps and work back until you have exposed the anterior ethmoid cell, you have an easy route to follow. It allows you to work back and leave the middle turbinate hanging.

Dr. Lee Cohen, Baltimore: Dr. Beck emphasized the difficulty of keeping the fronto-nasal duct from closing. This, in my experience, has also been the greatest difficulty in the treatment of frontal sinusitis. Dr. Ingalls of Chicago several years ago advocated the introduction of a gold tube into the frontal sinus to maintain drainage. For the past several years it has been my custom to introduce a rubber drainage tube into the frontal sinus when intranasal drainage of this sinus is required. The introduction of this flexible tube might at first thought seem quite difficult, but if a piece of drainage tube 5 inches long, varying from one-eighth to one-fourth inch in diameter, according to the needs of the individual case, is slid over an ordinary Ritter bougie, its introduction will be found quite simple. The tube should be fenestrated for about 1 inch from the end first introduced, and in order that it may not be necessary to cut the tube off within the nose after its introduction, it may be cut into two sections before putting it over the bougie. The section near the handle of the bougie serves simply as a means to slide the fenestrated portion of the tube off the bougie, after its introduction into the frontal sinus. The sinus can be treated by irrigation, if desired, by the introduction of a small silver cannula into the lower end of the rubber tube. Two weeks after operation the drainage tube is removed, leaving a nice round opening, the walls of which have healed fairly well without contraction, on account of the presence of the tube. In some instances where pus still forms in the sinus, it may be necessary to reintroduce the tube several times for intervals of a week or two, before suppuration finally ceases. In a number of cases treated in this manner during the past several years, satisfactory results have been obtained, after failure following other operations.

Dr. Harvard M. McNaught, San Francisco: Last year I reported ninety consecutive cases of maxillary antrum operation by the intranasal method. These operations were done with the purpose of ascertaining what proportion of cases are curable by the simple intranasal operation. I use a modified Krause operation. About 85 per cent. of intranasal involvements result in cure without radical operation. Another point that has not been emphasized is the use of intranasal irrigation. I emphatically condemn intranasal irrigation for sinus infection. You get a dehydrating or water-logging effect. The tissues will store up the different salts or give them out and you produce an irritating effect which in many cases keeps up secretions that you want to disappear. We only use a wash for a week or two after operation, then rely chiefly on silver nitrate solutions, in varying strengths, sometimes as high as 50 per cent., and we find we get better results.

Dr. Francis Alter, Toledo, Ohio: I am of the opinion that some of these cases can only be cured by the combined internal and external operations. I have not had the extreme strenuous experience Dr. Beck mentions in connection with the bad cosmetic effect from the Killian operation. Without a doubt it is a deforming operation, and the deformity is not easily borne by the average patient. It has been my experience that this feature of the Killian operation can to some extent, at least, be minimized and made less noticeable by limiting the anterior opening into the sinus. One must have a generous enough opening to inspect the sinus, but there is no absolute need to make the external opening correspond to the sinus itself. In a series of fifteen operations the results in nearly all of the cases have been very gratifying as far as a cessation of the pathologic process is concerned, but somewhat variable as to the amount of the deformity.

I have had a larger percentage of male than female patients. Obviously it is easier for a man to bear with the resultant deformity. In all but two cases, which were among my first, I was exceedingly careful to do thorough intranasal work. When I failed to do this I was compelled to reoperate because of reinfection. This is a point which cannot be emphasized too strongly. We should precede the external operation by thorough removal of the middle turbinate and a careful exenteration of the ethmoid cells. The main indications for the external operation are: (1) A persistent discharge which cannot be lessened by the well known methods, especially when associated with severe headaches. (2) A spontaneous fistulous opening existing over the sinus. I was much impressed with Dr. Beck's operation. The only criticism I have to offer is that the technic is too involved for the average operator. Some method must be provided to eliminate and cure these pathologic frontal sinuses and yet leave no cause for regret as far as the cosmetic element is concerned.

Dr. J. F. Barnhill, Indianapolis: An operation which provides only a small opening into the frontal sinus for the purpose of work in this sinus seems to me to be a bad one. It is observable in nearly all operative work of throat men that they seem to be too much afraid of an adequate opening. Frequently the small opening will not heal at all for the reason that through it the disease cannot be thoroughly eradicated and will, therefore, make a great deal of subsequent trouble, whereas a large opening, through which the diseased portion may be removed, heals rapidly and entirely satisfactorily. Now with these facts in view I cannot see why we should make a small opening and try, usually unsuccessfully, to clear out all of the diseased tissue of the sinus, when a larger opening will enable the operator to do the work in the open, and therefore more surgically correct and better in every way. A point that has not been mentioned here is that in these chronic sinus conditions for which we do this operation the entire mucous membrane is

usually so thickened and diseased that the entire sinus is often filled with this degenerated membrane. Anyone who does not curet out every bit of this mucous membrane will not, in all probability, cure his case. If he leaves some of it in any of the numerous angular pockets of the sinus, or in any part of the sinus we may be sure it will grow and fill the sinus again with the result that failure is almost certain. Satisfactory work can therefore only be done through a large opening.

DR. CULLEN F. WELTY, San Francisco: I wish to mention one thing in relation to the ethmoid that has not been stated clearly, if at all, and that is leaving the middle turbinate and taking your ethmoid away. In selected cases it is a recognized procedure, and one that will lead to many good results. If you have not a polyp formation in the middle turbinate, in many instances, you will cure that case absolutely by taking away the ethmoid and leaving the turbinate. I also insist on correcting the septum before destroying the ethmoid. In many individuals, the septum encroaches on the ethmoid and produces something that simulates ethmoiditis. By correcting the septum you do away with the ethmoiditis. The most important question to be decided in a case of suppuration of the antrum of Highmore is which operation you are going to do.

When polypi and hypertrophies are found in a nose that has a suppuration of the antrum of Highmore (frontal excluded), it is quite apparent that something in the line of a very thorough operation is necessary to bring the case to complete healing. I never operate for drainage. The only operation that will do this is the Luc-Caldwell with my modification of leaving the inferior turbinate intact. When this case has recovered, it will require a most careful examination to determine that the nose has been operated on at all. In other words, an operation on the antrum of Highmore, that leaves the nose intact so far as one can see, has a decided preference over all other operative procedures that destroy a whole or part of the inferior turbinate. A suppuration of the antrum of Highmore (frontal excluded) that does not show pathology in the nose (such as polypi and hypertrophies) will in a great majority of cases get well by irrigation. It is my contention that many of these more or less interesting operations that destroy the integrity of the nose are unnecessary. Furthermore, if an operation on the antrum of Highmore is necessary, the more completely the operation is done the more sure you will be of a permanent cure. I strictly confine my remarks to chronic cases and they are not chronic until they have lasted a year or more.

DR. M. WILLIAM CLIFT, Flint, Mich.: Dr. Inglauer brought out very well the difficulty of showing the sphenoid. The oblique method is difficult of interpretation. About two years ago I started to work out a method of showing the sphenoid by roentgenography, and at the present time I am using a dental film slightly larger than the ordinary size, which is placed in the mouth horizontally, back as far as possible, and the patient closes his teeth over the film. The ray passes through at an angle between the vertex and occipital protuberance. The angle must vary somewhat according to the type of skull met with. It is approximately 45 degrees in the average case. The advantages of the method are obvious. The first advantage from the Roentgen standpoint is the fact that the film lies very close to the sphenoid. It is comparatively close to the roof of the mouth, and the tissues to be penetrated are few. The second point is the fact that the sphenoid itself is shown clearly on the film without the overlying shadows of the ethmoid cells. By this method the infection of one side of the sphenoid can be shown clearly and the outlines of the normal side are demonstrable as well. The third point is that there is very little distortion of the shadow from the fact that the film is close to the sphenoid.

DR. JOSEPH C. BECK, Chicago: I am still unable to answer Dr. Mosher as to the pathology of a hemorrhagic frontal sinus, because I have not encountered a case that I could say was a hemorrhagic case. I have seen marked dilatation of the blood vessels with some extravasation in acute exacerbation of chronic cases, but nothing that I would consider a hemorrhagic case. I did not urge a modified Killian. I showed that it was very little better than an intranasal procedure so far as a definite cure was concerned. Dr. Barnhill touched on this operation, but his objections are scarcely valid in reference to the Lothrop operation.

The final point is this, that it is a question between you and your patient whether you want to adopt my procedure or the Lothrop operation; whether you want absolute cure or a slight suppuration; whether you want a suppuration which you can control or a deformity which will remain throughout the rest of the patient's life. The intranasal operation, or a method such as the Lothrop operation, I think will come into their own in frontal sinus work. I feel that just as the Gussenbauer, Kuster, Cooper and Jansen operations have gone, so, perhaps, my operation will go; but twenty-seven cases out of thirty-one being successful, without any deformity except some suppuration, is a good record. I believe the Lothrop operation as a late procedure after all has been done intranasally will be the best.

As to Dr. Iglauer's paper, a stereoscopic roentgenogram viewed from both sides, that is, stereoscopic and pseudoscopic, will give more information than the unilateral, distorted picture. Why Dr. Sauer did not mention the procedure of completely obliterating the antrum of Highmore by the method I devised, the only means that I know that will cure an otherwise incurable chronic suppuration after other simpler methods have failed, is the question I would ask. It has been published over five years.

DR. GEORGE F. COTT, Buffalo: Dr. Shambaugh claims that operation is for the relief of hyperplastic or suppurative ethmoiditis. The logical conclusion then is that operation should not be performed except when one of these conditions is present. However, a healed suppurative ethmoiditis may cause such distressing symptoms, although there is practically no discharge, that nothing suffices but operation. During the time I attended the Jansen clinic in Berlin in 1908 I found that he had operated 800 cases radically, and I asked one of his assistants how many recovered, and he said none. That may have been considerably exaggerated, and I do not think it was correct, but there are a large number that do not get well. The ethmoid operation is more or less dangerous, perhaps more than most. I saw Dr. Mosher demonstrate the operation in Boston, and he had had at that time seven cases. Since I have been operating, not only for suppuration but for a latent condition, I have tabulated fifty cases, not including ward or dispensary cases, and I think there will probably be from 75 to 100 per cent. without a fatal result. You will find that operations on the ethmoid after suppuration has ceased will be at least 100 per cent. more common in the future than in the past, and you will not get relief from the trouble unless you drain the cells. That does not mean to drain a case because there is pus there, but to obtain pneumatic drainage.

In regard to the Roentgen ray, it is absolutely useless in the cases that have had suppuration. I have tried it and have discarded it. There is nothing there to see.

DR. GEORGE E. SHAMBAUGH, Chicago: In regard to the question of the disposition of the middle turbinated body: There are a few cases where the nasal chambers are so roomy that it is not necessary to disturb the middle turbinated body when operating on the ethmoid cells. Under these circumstances it may be advisable often to leave the turbinated body standing. In many cases where the ethmoid operation is called for the nasal chamber is so constricted that it is with difficulty that one gets, even after cocainization of the nasal membranes, a glimpse of the lower edge of the middle turbinated body. Under these circumstances the resection of the concha media precedes any operation on the ethmoid labyrinth. As regards Dr. Cott's suggestion that the first indication for operation on the ethmoid is found in the persistence of symptoms following the disappearance of an acute ethmoiditis, I can hardly follow Dr. Cott in this matter, unless he has in mind the persistence of an ethmoiditis, hyperplastic or suppurative, after an acute infection. As a matter of fact, acute ethmoiditis is a not infrequent complication of acute rhinitis. This process subsides almost invariably without any operative treatment unless there exists a previous hyperplastic ethmoiditis or where the anatomic conditions are such that even slight swelling of the concha media effectually obstructs drainage from the ethmoid. Dr. Welty's point is a good one, that a high deflection of the septum requires correction before

the ethmoid can be reached effectively. If the operation is undertaken with the patient lying on the operating table, where the shock is very much diminished, it is usually feasible to correct the septum and complete the operation on the labyrinth at one sitting. The other suggestion by Dr. Welty, that the relief accomplished by an intranasal operation on the accessory sinuses can be got just as well from simple irrigation, I am not willing to accept. I would be almost willing to take the stand that any accessory sinus condition which can be cured by irrigation will get well spontaneously if left alone, with only the usual application of epinephrin or cocain applied under the middle turbinated body to facilitate temporary drainage. It is only, as a rule, the chronic form of accessory sinus disease where an operation is called for, and in these cases irrigation alone is usually of very little value.

DR. SAMUEL IGLAUER, Cincinnati: I have not tried the method Dr. Clift mentioned, although I found some reference to it in the literature. The objection stated in the literature is that the patient cannot control the soft palate and possibly not the tongue while the picture is being taken and therefore there is some danger of the film being moved during the exposure. This difficulty may, perhaps, be overcome by cocain or by a rapid roentgenogram. The film in the mouth method was suggested by Scheier some years ago but nothing seemed to come of it. If this method proves successful it will be better than the method I presented this morning. If it is not successful the oblique method will remain the best. Dr. Beck is inclined to question the value of the latter method. If he will look at the plates perhaps he will change his mind, since it is difficult to show details in lantern slides. I am convinced that one can tell whether the anterior or posterior group of cells is involved. I think that is valuable. There is one trouble with a patient who has recovered from an ethmoiditis or sphenoiditis, that the recovered cells may still show pathologically on the roentgenogram, so that one must consider the patient's history and the clinical findings in connection with the plate. I do not pretend to say that one should rely on the roentgenogram plate entirely; one certainly must employ clinical methods, but by combining the two fewer mistakes will be made.

THE QUANTITATIVE RELATIONSHIP OF MILK-BORNE INFECTION IN THE TRANSMISSION OF HUMAN COMMUNICABLE DISEASES *

EUGENE R. KELLEY, M.D.
BOSTON

For practical public health administrative purposes the list of human communicable milk-borne diseases that are of importance in the United States may be reduced to five: diphtheria, scarlet fever, septic sore throat, tuberculosis and typhoid fever. The only other group of human diseases which have certain definite claims for admission to this group of communicable diseases are the so-called infantile diarrheas. The entire question of the specificity of the micro-organisms that produce infantile diarrheas and of the part that milk may play in the transmission of such micro-organisms is still so far from definitely settled that it is probably wiser, in considering the relationship of milk-borne infection to human diseases, to limit its consideration to the diseases first enumerated.

In recent years there has been a great deal of agitation relative to the comparative importance of milk infection in the transmission of human diseases. Whenever the subject is approached in an impartial manner, it is rather astonishing to see how little real basis there is on which to form any definite estimates as to the quantitative importance of milk infection as compared to other modes of infection, such as water, carriers, or direct contact.

Of the five human diseases to be considered, it may be seen at once that tuberculosis represents a distinct problem. The evidence that incriminates cow's milk as a factor in the transmission of tuberculosis to human beings is now quite conclusive. Nevertheless, the data on which are based our quantitative estimates of the prevalence of human tuberculosis of bovine origin are comparatively scanty. This is because of the inherent difficulty in determining in any given case or cases whether or not it is the human or bovine type of the tubercle bacillus that is fundamentally responsible for the disease process. Such researches as those of the British Royal Commission and of the health department of New York City prove that the bovine tubercle bacillus is of frequent occurrence under conditions which render it practically impossible to come to any other conclusion than that the bovine tubercle bacillus is the fundamental cause of the disease process in a wide variety of human tuberculous lesions, especially in children. From these investigations, Park and Krumwiede of the New York City health department concluded that at least one third of all cases of tuberculosis in children under 5 years of age, as the disease occurred in New York City, were due to infection with the bovine tubercle bacillus and only a slightly less proportion in the cases occurring between 5 and 15 years of age.

The methods that must be employed to demonstrate whether or not it is the bovine or human type of bacillus that is at fault in any given case of tuberculosis are so intricate and involved that it does not seem likely at present that we shall soon have any accurate method of demonstrating the true frequency of bovine tuberculous infection. We will thus rest content with the general assumption that a considerable proportion of the cases of human tuberculosis are in all probability due to infection transmitted from the cow through drinking raw cow's milk.

With tuberculosis left at one side, the question of the relationship of infected milk to the transmission of disease in cases of the other four diseases, diphtheria, scarlet fever, septic sore throat and typhoid fever, ought to be a very much easier point to determine. Careful and thoroughgoing adherence to the laws of epidemiology, supplemented by equally careful and well coordinated laboratory investigations, will in the great majority of instances, in the case of epidemics, prove conclusively whether or not given cases of these diseases may be fairly attributed to milk infection. Nevertheless, at the present time there are apparently very few health departments in the United States that do determine, with even a very rough degree of accuracy, whether or not given outbreaks of disease are due to milk infection. In many instances outbreaks are very evidently alleged to be due to milk infection without any scientific investigations being carried out to verify or disprove this hypothesis.

There are several reasons why it is impossible in most instances to say whether or not milk could reasonably be held to be the channel of infection. It is the exception rather than the rule that any attempt is made to determine the probable source of infection as a routine procedure.

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

Even if physicians or health officials make an attempt to determine the always possible culpability of milk, they usually carry out the investigation no farther than to establish a suspicious frequency of infection in persons having a common milk supply. Then the outbreak is promptly labeled a milk epidemic and everybody is satisfied with the explanation except the milk man. He, having nothing at stake except perhaps the savings of a life time and a business reputation built up by years of earnest effort, timidly protests against such a harsh and hasty judgment, but his protests are brushed to one side by the cocksure doctor or health board that has condemned him and his products on most incomplete circumstantial evidence alone. Time and again careful epidemiologic investigation has shown that an outbreak that at first appeared to be milk borne has proved to be carrier borne or water borne, and vice versa.

The practical conclusion to be drawn from these facts of common knowledge to sanitarians is that an outbreak of disease may be considered tentatively as probably milk borne on a showing of high frequency of cases on a common milk route or on routes having a common source of supply. This alone is ample evidence to demand prompt administrative action, such as shutting off the supply, or, better, careful pasteurization, an investigation of dairies producing milk and of middlemen handling milk in order to detect the possible source, and such other similar precautionary measures as circumstances may suggest. In order definitely to declare any disease milk borne, however, it is necessary to carry out, by epidemiologic and laboratory means, a careful search for and detection of the disease, or a past history of the disease, in a person or the persons handling the milk at any point, and a thoroughgoing exclusion of all other probable channels of infection. When this perfectly fair and reasonable system of checking is applied to alleged milk-borne epidemics, it is surprising to note how often such epidemics fail to show any clear-cut proof of being milk borne.

Even definite proof of milk being the channel of infection in epidemics may not fairly indicate the total relative importance of milk as a channel of disease transmission.

Although at the present time no definite epidemiologic standards exist as to what is meant by the terms "outbreak" or "epidemic," yet analyses of morbidity reports will nearly always show that for the diseases under consideration, one, septic sore throat, is reported almost exclusively in epidemics. In the case of diphtheria, scarlet fever or typhoid, their sporadic or endemic occurrence far outweighs, in the aggregate, their occurrence in epidemics. It is almost unique to have a single or sporadic case of any of these diseases definitely traced to milk infection. It is easy enough to assume that many such cases must be due to infected milk, but to prove it, even to render the case fairly reasonable against milk, is another matter.

A tabulation of investigations of outbreaks and epidemics carried out over a series of five years by the field force of the Massachusetts State Board of Health from 1910 to 1914, inclusive, shows that 240 epidemics and outbreaks of diphtheria, scarlet fever, septic sore throat and typhoid, due to all causes, were investigated. The total number of cases recorded is 3,198, but in many instances a statement is made that the true number of cases is believed to be greater, or that more cases may yet occur subsequent to the report. Because of the policy followed, it is believed that practically every outbreak of any material dimensions of these particular diseases occurring in the state was investigated.

Even assuming for purposes of argument that the admitted incompleteness of cases is as great as 50 per cent., a most liberal concession, this would only assign about 6,000 cases of these diseases to epidemics or outbreaks.

In the same years a grand total of 85,958 cases of these same diseases were officially reported in the state, and this would indicate that the almost unnoticed sporadic or endemic prevalence of these diseases is a vastly greater problem than their occasional epidemic occurrence. No evidence is available pointing to milk infection in any of these sporadic cases. The comparisons shown in Table 1, based on the Massachusetts investigations, are of interest in this connection:

TABLE 1.—DATA OF ORIGIN OF THE FOUR CHIEF MILK-BORNE DISEASES

Year	Number of Epidemics	Number Due to Milk	Number Due to Other Causes	Percentage Milk Borne
Diphtheria:				
1910	4	0	4	0
1911	13	1	12	7.7
1912	9	1	8	11
1913	9	0	9	0
1914	26	0	26	0
Total	61	2	59	3.2
Septic sore throat:				
1910	0	0	0	0
1911	1	1	0	100
1912	0	0	0	0
1913	3	2	1	66
1914	2	1	1	50
Total	6	4	2	66
Scarlet fever:				
1910	11	1	10	9
1911	10	1	9	10
1912	8	2	6	25
1913	23	1	22	4.3
1914	35	2	33	6.0
Total	87	7	80	8
Typhoid fever:				
1910	15	10	5	66.6
1911	11	2	9	18.2
1912	6	3	3	50
1913	31	8	22	25.8
1914	23	10	13	43.5
Total	86	33	52	38.4
Grand total	240	46	194	19.2

In Table 1 the incidence of more than one case in different families in the same locality at the same time is classed as an epidemic or an outbreak with the natural effect that with three or four exceptions the average number of cases per epidemic is small. There have been many small outbreaks in which no suspicion has been raised relative to the milk supply that have been handled wholly by local authorities and concerning which no epidemiologic information is recorded in the state department of health. This fact does not invalidate the significance of the table, because for several years past it has been the fixed policy of the department to investigate every case of contagious disease reported from a milk-producing farm, as well as every outbreak, whether in a large or small community, in which milk was at all under suspicion. Therefore a fuller table of outbreaks would only tend to lessen the percentage of milk borne.

In the same connection it is interesting to note that in these five years fifty-five other investigations were made by the state health inspectors of Massachusetts in instances in which a single case of contagious disease was reported from a milk-producing farm, and precautions ordered and observed, with no secondary cases of any nature subsequently occurring.

As regards the occurrence of milk infection in sporadic or nonepidemic cases of these diseases, owing to the fact that Massachusetts local boards of health are required by law to report to the state health authorities only the names, addresses, diagnoses and dates on which cases of infectious diseases are reported to them and that the routine notifications to the state health department are limited strictly to this information, the routine records of cases in the Massachusetts state health department throw no light whatever on the question. During an investigation in 1915 of the entire question of milk in its relation to the public health, the Massachusetts state health department sought to supplement the lack of any routine information in its own records as to frequency of milk infection by requesting information on this point from all of the local boards of health in the state. Accordingly, a circular questionnaire was sent to the local boards of health in the commonwealth, 353 in all, asking for statements as to the total number of cases of typhoid fever, diphtheria, scarlet fever and septic sore throat reported to the local board of health during the five-year period, from 1909 to 1913; the number recorded as due to milk infection following investigation by the local board; the number suspected of being milk borne without conclusive evidence being obtained, and the total number of deaths from the same diseases in the corresponding period and the number of such deaths attributed to milk infection.

Forty towns, having an aggregate population of 50,134, stated that no cases of these diseases due to any causes were reported in this period to their local boards of health. Inasmuch as these "no cases" towns are all comparatively small, it may be reasonably inferred that at least no outbreak of these diseases could have occurred in any of them during the period under inquiry, for such an occurrence would have been practically certain to have become a matter of record in the local board of health office. It is also true that in practically all of these towns, the machinery of milk production and distribution is extremely simple.

The remaining 102 towns and the thirty-four cities, total 136, answering the questionnaire represent an aggregate population of 2,703,759 (census of 1910), or 80 per cent. of the total population of the state. They reported as is shown in Table 2.

Analysis of these totals demonstrates that in only 0.03 per cent. of cases was the transmission of diphtheria definitely assigned to infected milk, and in only 0.19 per cent. was milk either proved or suspected; 1.6 per cent. of the reported cases of scarlet fever were definitely attributed to milk infection, and 1.8 per cent. proved or suspected; in 79 per cent. of the cases of septic sore throat (not reportable in Massachusetts until 1914) milk was assigned as the cause; and in 5 per cent. of the cases of typhoid, milk was definitely assigned as the cause and in 6 per cent. of the cases of typhoid milk was either proved or suspected to be the agent of infection in this disease. Taking all of these diseases in a group, 3.9 per cent. were definitely attributed to milk, and in 4 per cent. of all the cases milk was proved or suspected. Considering mortality, 3 per cent. of typhoid deaths are possibly attributable to milk, 0.08 per cent. of diphtheria deaths, 0.8 per cent. of scarlet fever deaths, and 98 per cent. of septic sore throat deaths; an average for the whole group of 2 per cent. of the deaths may be attributed to infected milk.

TABLE 2.—NUMBER OF CASES AND DEATHS DUE TO MILK AND OTHER CAUSES

Diseases	Number Cases, 1909-1913	Number Deaths, 1909-1913	Number Cases Due to Milk	No. Deaths Due to Milk	No. Cases Milk Suspected*	Deaths Milk Suspected*
Typhoid fever.....	11,292	1,425	558	37	135	8
Diphtheria.....	31,886	2,580	11	1	49	1
Scarlet fever.....	31,012	991	495	8	57	0
Septic sore throat.	2,436	49	1,914	48	0	0
Totals.....	76,596	5,045	2,978	94	241	9

* "Suspected" here means that milk was considered to be the probable source of infection, but the suspicion was not conclusively proved.

CONCLUSIONS

From this statistical study, although it is incomplete in several respects, many interesting and suggestive deductions can be made.

Analysis of Massachusetts investigations does not corroborate the statements to be found in various places in recent literature, alleging that milk is a very important channel of infection in a quantitative sense in this group of diseases.

Massachusetts experience would seem to indicate that even in raw milk supplies, with widely varying conditions of supervision, diphtheria transmission through milk is so rare an occurrence as to be negligible.

The transmission of scarlet fever through milk, while much more common than diphtheria, is of very small percentage significance.

Typhoid fever in this large series, extending over a period of years, was reasonably attributed to milk infection in a much larger number of cases than diphtheria or scarlet fever, but these amounted in all to only 5 per cent. of the total cases of typhoid reported, a very different story from the statements of from 10 to 25 per cent. frequency of typhoid infection by milk that can be found in various places in recent public health literature.

Septic sore throat is par excellence the milk-borne disease, but its occurrence is fortunately relatively rare. When it does occur, it is nearly always in epidemic form and is of more serious consequences.

In all probability, the menace of tuberculosis is the best justification that we have as practical sanitarians for the amount of propaganda that has been carried on and the money that has been expended by health authorities for the supervision and control of milk supplies, so far as such supervision aims at the suppression of communicable diseases.

Relation of Mental Deficiency to Delinquency.—The relation of mental deficiency to delinquency, dependence and immorality, is vastly more important in the years of adult life than in childhood, but the phases of the problem as they present themselves in the years of school life are more readily manageable. The school population, therefore, constitutes the larger group to which access for satisfactory investigation can be had.—Treadway, *Public Health Reports*, Nov. 24, 1916.

NOTE ON THE TREATMENT OF TRICHINOSIS WITH THYMOL*

BRADFORD A. BOOTH, M.D.
WILLIAM N. GOEHRING, M.D.
AND
MAX KAHN, M.D., PH.D.
PITTSBURGH

The treatment of trichinosis may be divided into two stages: (*a*) the period when the parasite is within the lumen of the intestine, and (*b*) the period when the parasite is within the muscles and tissues of the body.

1. First Period.—It is quite well known that thymol is a very good anthelmintic. In unicinariasis it almost has specific action. The method adopted in the treatment of trichinosis during this period may be the one suggested by Ashford, King and Gutierrez of Porto Rico, as given by Stiles: A purge is administered to the patient of magnesium or sodium sulphate with abundant water the evening before the thymol is given. Early the next morning, no breakfast being allowed, the patient (if an adult) is given 2 gm. of powdered thymol in capsules, and another 2 gm. two hours later, after which another dose of salts is administered. The dose of thymol varies according to the age and the strength of the patient. The doses in one day advised by the Porto Rican authors are:

Under	5 years....	0.5 gm.
Between 5 and 10 years....		1.0 gm.
Between 10 and 15 years....		2.0 gm.
Between 15 and 20 years....		3.0 gm.
Between 20 and 60 years....		4.0 gm.
Above	60 years....2.0 to	3.0 gm.

The symptoms unfavorable for the administration of thymol are: great debility, old age, pregnancy, advanced cardiac disease, anasarca, diarrhea and dysentery. Thymol solvents like oil and alcohol should be forbidden.

2. Second Period.—It is futile to give thymol by mouth after the parasite has left the intestinal canal and lodged itself in the muscle. The thymol does not circulate in the blood as such after its absorption from the alimentary mucous membrane. Its antiparasitic powers are neutralized by the liver. Thymol is meta-iso-propyl-cresol. From the intestine it is absorbed into the portal circulation, and there conjugated with sulphuric and glycuronic acids and excreted in the ester form in the urine. The process of conjugation is the means used by the body to detoxicate the aryl compound.

It is obvious, then, that if we want to attack the trichinae in the muscle and tissues, another method of administration of thymol must be resorted to. Parenteral injections of thymol would exclude the conjugating influences of the liver. The thymol would be absorbed in the blood and would circulate as such, and thus be able to attack the parasite in situ. We, therefore, adopted the following procedure in the treatment of trichinosis during the second period:

Fifty grains of thymol were dissolved in 50 c.c. of sterile olive oil, which had been autoclaved for several minutes. The solution was then resterilized and used. The patient was given from 2 to 3 c.c. of this solution subcutaneously or intramuscularly daily for seven days. The administration was then discontinued for several days and then again repeated. No toxic effects were observed. Following is the report of a case in which this treatment was given:

* From the Laboratories of the Western Pennsylvania Hospital.

REPORT OF CASE

J. S., aged 26, an Austrian Jewish laborer in a slaughter house, came to the hospital complaining of swelling under the eyelids and on the face. The patient stated that his muscles were sore and stiff, and until three days before (April 23, 1916), he was able to work. On the evening of that day, while coming home from work, he had several chills, and then he felt hot all over his body. The arms and legs felt rigid and painful. He went to bed, and on awakening he found that the swelling around his eyes almost prevented them from being opened. He remained in bed feeling very hot but not perspiring. He had had no gastric or abdominal symptoms up to this time. The family history and personal history were negative. The patient gave a vague history that while serving in the Austrian army four years before he had had attacks of muscular pain and stiffness with fever which were severe enough to confine him to bed, but he thought that these attacks were due to the fatigue of forced marches.

Physical examination was negative, save for the edema of the eyelids and the tenderness over the limb and abdominal muscles.

Diagnosis was made by the presence of eosinophilia—above 20 per cent.—and the finding of the encapsulated parasite in the section of muscle removed for examination. No parasites were found in the feces.

The patient had a septic temperature between 99 and 103 F. He was listless, and complained much of pain and swelling under the eyes.

On treatment with thymol, the temperature quickly subsided. The pain in the muscles and the swelling of the conjunctivae disappeared, and the patient became normal mentally. He was dismissed from the hospital cured.

It was noticed that following the administration of thymol oil solution there was an increase in the percentage of the eosinophil leukocytes up to 30, 45 and as high as 55 per cent. This was no doubt due to the destruction of the parasite and the absorption of the parasite protein into the blood. There was no discomfort to the patient, except that a rash appeared on the palmar surfaces of the hands which cleared up when the administration of thymol was stopped.

The urine examination was normal. Some of the thymol was excreted as such in the urine, whereas another fraction was excreted in conjugation with sulphuric and glycuronic acids.

Toxicity of Creosote Oils in Relation to Its Volatility.—Considerable data on the toxicity of creosote oils and other wood preservatives has appeared in the chemical literature of the last five years. Various writers have pointed out that the so-called boiling point, or more properly speaking, volatility of the oils was a great factor in relation to the toxicity, irrespective whether the source of the creosote oil was from coal tar or water gas. Nevertheless the data given often seemed conflicting. In studying the discrepancies, Batemann (*Jour. Ind. and Eng. Chem.*, December, 1916, p. 1097) of the Forest Products Laboratory of Wisconsin formulated a table representing curves both for water gas and coal tar creosotes, based on the relation of the volatility to the "killing point" (against *Fomes annosus*). From this coordination table, Batemann first predicted what the toxicity of certain creosote oils, based on their volatility would be; these predictions were then checked by tests, with the result that the predictions and tests agreed closely. Also the table shows that the lower the percentage of oil boiling below 275 C., the greater the toxicity. Aside for the interest of being able to forecast the toxicity of the creosote oils, the work also suggests a possible method for determining the purity of oils. The Madison experimenters are extending the research to this phase, which should yield quite useful information.

TREATMENT OF SCIATICA BY PERINEURAL INFILTRATIONS AND EPIDURAL INJECTIONS

AN ANALYSIS OF FIFTY CASES *

CHARLES ROSENHECK, M.D.
Neurologist, Hospital for Deformities and Joint Diseases
AND
HARRY FINKELSTEIN, M.D.
Adjunct Orthopedic Surgeon, Hospital for Deformities and Joint Diseases *
NEW YORK

As an introduction to our subject we can do no better than to quote D'Orsay Hecht,[1] who says:

> Nowhere in the domain of nerve pains is the agony of neuralgia, its chronicity and rebelliousness to treatment so well illustrated as in tic douloureux and sciatica.

Our experience with private material and at the Hospital for Deformities and Joint Diseases, in which we have had unusual opportunities to observe and to study this distressing disease, confirms this statement in every particular. The patients haunting the portals of every institution and appealingly craving for the relief which is so tardy in coming are indeed objects of commiseration. Any treatment which promises deliverance from its uncompromising clutches is worthy of our sincerest efforts.

Stimulated by the glowing reports of authoritative observers, both here and abroad, as to the value of perineural and epidural injections in sciatica, we decided to give the treatment a thorough trial. The number of cases treated in this study, we believe, is sufficiently large to form a fair criterion as to the value of the treatment in question. The patients were carefully selected, the technic rigorously observed, and only those who promised a modicum of success were injected. On the whole, our results have been disappointing, our percentage of cures being far less than that reported by other observers.

For the purpose of simplifying sciatica in general, we have divided the cases into three classes:

Class 1. Symptomatic sciatica; due to recognizable infections, toxemias, constitutional diseases, exposure to sudden temperature changes, pelvic disturbances and organic nervous diseases.

Class 2. Orthopedic sciatica; an arbitrary division due to recognizable orthopedic conditions, namely, spondylitis deformans, lumbosacral, sacro-iliac subluxations and disease and infections of the hip joint.

Class 3. Sciatica neuritis; fortunately in the minority, and not due to any recognizable condition, as in Classes 1 and 2.

As diagnostic criteria, the patients were carefully examined clinically, then from an orthopedic and neurologic point of view, and finally by the aid of the laboratory and Roentgen-ray department.

The best results obtained by the perineural injections were in the acute cases of sciatica due to exposure. These numbered ten cases. Five patients were immediately benefited, three were unimproved, and two were distinctly made worse. While this is a good percentage of recoveries, it is no better than that obtained by the old method of rest in bed, "ironing" or other local measures with administration of analgesics.

The greatest number of cases, exclusive of those induced by a definite history to exposure or sudden changes in temperature belonged to Class 1 and 2, termed symptomatic and orthopedic sciatica. These numbered thirty-five, and were about equally divided. The underlying conditions causing the sciatic distress were treated independently, supplemented by injections. Of this number, five patients were improved, and one remained free of pain for six months and returned to be reinjected. Included in this series are six patients who received epidural injections as advocated by I. Strauss[2] of this city. Five of these were injected by one of us (Dr. Finkelstein) and one was injected at another institution. Four were complete failures, one patient was slightly improved, and one, as mentioned before, was free of pain for six months.

Class 3, termed sciatic neuritis, contributed five cases. These showed evidence of nerve degeneration as shown by diminution or absence of the Achilles reflex — "muscle mass" tenderness, various grades of myotonic and myosthenic alterations and disturbances of sensibility. These patients received from one to four perineural injections, each without the slightest change in the subjective symptoms.

CONCLUSIONS

Comparing our results with those reported in the literature, we find that approximately 20 per cent. of our patients were cured or improved, as against from 60 to 65 per cent. of those of other observers, notably D'Orsay Hecht, Lange, Bumm, Umber, Alexander, Kellersman, Grossman and Schlesinger (quoted by Hecht). We are at a loss to explain this striking difference in results, except by the difference in the material treated or by the haphazard injecting of patients with gluteal pain — not necessarily sciatic in origin.

247 West One Hundred Thirty-Fifth Street—236 West Seventieth Street.

NOTE.—Since writing this report, we have notes of another patient with sciatic neuritis who had received three epidural injections at another institution and two perineural injections by one of us, without any benefit.

* From the Service of Dr. Henry W. Frauenthal, Hospital for Deformities and Joint Diseases.

1. Hecht, D'Orsay: The Treatment of Sciatica by Deep Perineural Infiltrating Injections of Salt Solution, THE JOURNAL A. M. A., Feb. 6, 1909, p. 444.

2. Strauss, I.: Med. Rec., New York, Feb. 6, 1915, p. 150.

* Read before the Section on Preventive Medicine and Public Health at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

THE SANITATION OF THE SHELLFISH INDUSTRY *

HUGH S. CUMMING, M.D.
Surgeon, Public Health Service
WASHINGTON, D. C.

It is probable that shellfish were among the earliest animal foods eaten by our progenitors, because of their abundance and accessibility wherever the combination of ocean with streams bringing down suitable food existed. The large shell mounds which have been found along our coasts and the writings of the earliest colonists testify to the value of the oyster, both to the Indians and to the colonists themselves, while in Great Britain and France some of the most ancient rights and privileges were those relating to shell fisheries. The industry, however, was for many years local in interest and extent because of the absence of transportation facilities. With the construction westward

of the Baltimore and Ohio railroad in 1837, followed by other railroads, the population which could be served was greatly increased; this event was soon followed by the establishment of steaming and canning houses and the consequent growth of an organized industry, but there was no way of shipping raw oysters except in the shell, and that was precarious because of the lack of refrigeration. This problem was solved by the introduction of modern methods of refrigeration. In consequence fresh shellfish are now shipped all over this country and even to Europe. The great demand for this food eventually caused the exhaustion of many natural beds and necessitated the planting and cultivation of oysters, in many instances, in remote and in accessible regions.

This required the use of power vessels and investment of large capital, and since the introduction of steam dredging in 1877, and later the use of other power boats, the industry has grown in organization and value until there are now large corporations with hundreds of thousands of dollars invested. It is a source of great wealth to many coast states, and is the most valuable of all the fisheries industries of this country, greatly exceeding that of other countries.

EVILS WHICH FOLLOWED EXPANSION OF THE INDUSTRY

The organization and expansion of the industry led to several serious evils. In dredging oysters on some grounds a quantity of mud is stirred up and enters the normally open shells of the oyster, which, when disturbed by the dredging, close and thus retain the dirt. Oysters grow well but do not fatten on certain grounds and during certain seasons; shellfish from waters with a high saline content do not, it has been claimed, keep or stand shipment well.

To allow the oysters to cleanse themselves of the dirt, to lessen their saline content, and quite often to cause them by osmosis to become large, and apparently, fat, there began the custom of "floating" or "drinking" oysters in waters of less salinity than those in which they had been grown.

Certain areas favored by nature have become famous for producing delicious oysters, and, to supply the demand, shellfish of a similar size or shape are sold under favorite names regardless of their origin. Finally, commission houses and middlemen often buy oysters from all comers, ignorant, indeed, regardless of their origin so long as they "open up" satisfactorily.

CHANGES IN SANITARY CONDITIONS CONSEQUENT ON MODERN METHODS OF SEWAGE DISPOSAL

In consequence of the increased interest in the conservation of health and the prevention of infectious diseases, there has been a growing appreciation of the necessity for the proper disposal of the sewage of urban communities. It was quite natural that communities situated on or near great bodies of water should consider them as the proper places for such disposal.

But this increase of sanitary effort has very seriously affected the oyster industry. Large and valuable oyster grounds are located near many of our coastal communities; indeed, the value of the grounds often in a large part depends on their proximity to transportation and to labor facilities; while the suitableness of areas for the cultivation of oysters depends on their location near the mouths of streams where the mingling of the sea water with land water affords the necessary conditions for the growth of shellfish. Nearly always communities have grown in such localities, often partly in consequence of the shellfish industry.

INFECTIOUS DISEASES DUE TO POLLUTED SHELLFISH

Even before the bacterial origin of certain diseases was discovered, it was known that shellfish, such as oysters, clams and mussels, taken from grossly polluted waters, would often cause illness.

With the increase of pollution consequent on the growth of communities and the construction of sewerage systems, the danger from eating shellfish increased. Cameron and others in England soon after 1890 reported typhoid fever from shellfish, and Professor Conn of Wesleyan University in 1894 traced and reported an outbreak for the first time in this country, after which event the Goshen, Inwood and Lawrence outbreaks were studied and reported by Drs. Stiles, Soper and Pease. Since that time other outbreaks have been reported from Ocean City, Atlantic City and elsewhere. In some instances the incriminated shellfish had been taken from grossly polluted waters near the outlets of public sewers, and in other instances from near the outfalls of private sewers draining houses in which there had been cases of typhoid fever.

During the past winter there have occurred outbreaks in Illinois, New York and Pennsylvania, which were almost certainly due to oysters opened in a shucking house in which there were cases of typhoid fever and general insanitary surroundings.

FORMER EFFORTS TO CONTROL SANITARY CONDITIONS

As a result of the increased activity of state health authorities and the exercise of police power granted the Bureau of Chemistry, Department of Agriculture, under the "pure food law," some of the most obviously dangerous localities have been abandoned as growing or floating grounds. Several of the states have made fairly comprehensive studies of the sanitary conditions of their oyster beds, and a ruling of the Department of Agriculture caused the abandonment of the old method of placing ice in the oysters and the substitution of better methods of refrigerating and handling opened oysters.

These efforts to control the sanitary condition of shellfish have been only partially successful for several reasons. State and local organizations, because of lack of power or of sufficient police force, or because of local interests, or of ignorance, have failed to prevent the taking of shellfish from grounds which they have known to be badly polluted and have allowed grossly insanitary conditions in shucking houses. In other instances oysters removed from polluted grounds for the ostensible purpose of transplanting have been carried to other shipping points and have been sold to dealers ignorant of or indifferent to their origin. Again, too, much significance has been attributed to the results of bacteriologic examinations, which have at times been based on faulty premises. While the finding of *Bacillus coli* in large numbers should be, and has been, taken to indicate filth, and may indicate potential danger of infectious disease, it does not, however, follow that the absence of large numbers of these organisms proves freedom from such danger.

Then, too, the origin of the oysters is perhaps generally unknown, and the condemnation of a lot in one community does not protect other communities to which similar shipments have been made. It is obvi-

ous, however, that an examination of every shipment of such perishable food would be quite impracticable regardless of the inspecting force available for the purpose.

INVESTIGATION OF COASTAL WATERS BY THE PUBLIC HEALTH SERVICE

The Congress in 1912 passed an act which enlarged the public health activities of this service, and, among other things, provided for the study of the pollution of navigable waters. This study has been divided into a study of the pollution of inland waters with reference to water supplies and sewage disposal and their effect on infectious diseases, and a study of coastal waters. The latter has been under the direction of the writer. Beginning with a study of the pollution and self-purification of the Potomac River with special reference to the sanitary condition of shellfish, this investigation has been extended, so that a fairly comprehensive survey has been made of the shellfish areas of Chesapeake, Delaware, and Raritan or Lower New York bays and their tributaries, as well as of the Atlantic coast from the Virginia capes to Long Island. This summer the investigation of Long Island Sound has been started and will be continued.

The investigation has included a sanitary survey of the sources, character and amount of proximal pollution, a bacteriologic examination of shellfish and water over the beds, and such epidemiologic studies as would determine the prevalence of typhoid fever, the amount of infectious disease due to shellfish, and the character of pollution causing such infection. Properly to carry out the investigation, a steamer was fitted for laboratory purposes, in addition to laboratories on shore. An experimental laboratory equipped with large tanks for sea water was established on Fisherman's Island at the entrance to Chesapeake Bay for the purpose of solving problems relative to the pollution of shellfish.

Many important facts have already been ascertained regarding the influence of so-called "hibernation," the effect of the physical condition of pollution, the longevity in sea water of bacteria of the colon group and typhoid organism, and as to the practicability of self-purification and artificial purification of oysters.

Throughout the investigation the service has worked in cooperation with and received aid from the various state authorities; it has also received the sympathetic aid of large oyster planters and dealers who appreciate the ultimate good effect of such work on their industry.

No intensive study of shucking house or of shipping conditions has been made, as this has been undertaken by the Bureau of Chemistry.

SANITARY CONDITIONS OF SHELLFISH

As a result of investigations already made, it was found that shellfish were being shipped from some polluted areas, and in certain instances, particularly dangerous areas. State and federal authorities were notified of such conditions and generally the state authorities have been prompt to take such corrective steps as were afforded by existing law. Where such laws were deficient, the service officers have assisted in endeavoring to correct the conditions.

At present the great bulk of oysters now shipped throughout the country are from safe grounds, and the shucked oysters are opened in fairly sanitary houses; in fact, some of the larger dealers have spent a great deal of money and thought in the construction and equipment of admirable houses.

Unfortunately, oysters are still being taken from a few small but dangerously polluted beds and there still exist shucking houses in which the insanitary conditions are shocking and filthy. So long as these exist there will continue to be a danger of such outbreaks as occurred during the past winter in Illinois, New York, Pennsylvania and elsewhere.

It seems reasonably certain that all of these outbreaks have been caused by oysters from one commission man who sold, among others, oysters shucked in a house in which there were cases of typhoid fever and no toilet facilities.

SUGGESTIONS

As sanitarians, the sanitary control of the shellfish industry is of interest to us from two standpoints: first, in preventing the spread of infectious diseases thereby, and second, since the importance of proper food is appreciated and the cost of meats has become high, we are interested in the preservation of the purity and safety of this sea food.

The danger of infection by shellfish should be eliminated by an investigation, comprehensive in character, to determine definitely which grounds are safe and which are dangerously polluted. This has already been done by the service over a large part of the oyster areas.

Where grounds are polluted, either the pollution or the shellfish should be removed; the determination as to which should be done is an economic question depending on the relative value of each.

There is, in the light of present knowledge as to the purification of shellfish, no good reason why oysters should not be grown in moderately polluted waters if they are transplanted to nonpolluted waters and there left for a sufficient length of time, provided that the health authorities have sufficient police force and authority constantly to supervise such action; where such facilities do not exist the oysters should be destroyed or removed during the closed season.

Health authorities should exercise rigid supervision over the sanitary condition of shucking houses and the health of employees therein, particularly with reference to the presence of ample and sanitary toilet and bathing facilities; certainly the bunking of employees in shucking houses should not be tolerated.

The handling of shellfish, especially shucked stock, by the retailer and in public eating places should be more carefully supervised by food authorities.

The determination of the safeness and unsafeness of shellfish areas cannot be left to local or state authorities alone, for they have not, as a rule, the facilities, nor have they always the entire confidence of other states.

With the exception of New York, a comparatively small proportion of shellfish are consumed within the community or even the state of origin, and this problem is therefore properly one for federal investigation in cooperation with the states.

The policing of shellfish areas and elimination of pollution or of polluted oysters is a problem which should be solved by the states whose citizens are enriched by the shellfish industry, in cooperation with federal authority.

Local and state authorities can assist in eliminating the danger of the spread of infectious diseases by

shellfish by a careful study of the origin of typhoid fever cases, the collection of data relative thereto, and the reporting of such cases to the Public Health Service.

The control of the sanitary condition of shellfish is an important problem, which in a peculiar way requires the hearty, thorough cooperation of local, state and federal authorities. Without such control, the danger of occasional outbreaks and of isolated cases from infected shellfish will continue and the industry will decline, while the population will be deprived of a nutritious and delicious food; with such cooperation, the sanitary danger therefrom can be removed, the industry will indefinitely increase, and the country will have an increased food supply.

ABSTRACT OF DISCUSSION

Dr. William W. Ford, Baltimore: During the past year we have received complaints to the state board of health that the oysters from certain shucking houses, particularly some of the shucking houses on the eastern shore, were responsible for a number of cases of typhoid fever. The difficulty, in my opinion, is to be met only by two very distinct lines of work. In the first place, it is absolutely essential that we should have some control over the conditions in the shucking houses, the sanitary conditions of the individuals who are actually handling the oysters. And, in the second place, it is essential that we should have some control over the conditions which meet the oyster as the oyster is delivered to the consumer, and, as far as Baltimore is concerned, it seems to me that we are almost entirely lacking in the latter.

I do not think that we have any method of controlling the condition of the oyster as it is delivered, particularly of what we call the shucked oyster. As far as the control of the sanitary conditions in the shucking houses itself is concerned, that is a matter of vital concern to the state department of health. But, the practical difficulty comes up that we do not have a sufficient sum of money appropriated by the state of Maryland to permit us to appoint competent inspectors to handle that work and to carry out an inspection which is comprehensive and thorough and that, to my mind, is our primary difficulty in the whole oyster question: We have never been able to educate the state of Maryland to the point where the politicians, the men who handle the finances of the state, are able to understand that the oyster industry depends primarily for its success on the well-established belief in the community that the oysters are free from danger. We have reiterated time after time, in public and in private, our belief that many of the oysters collected in Maryland, collected in the Chesapeake Bay, were seriously polluted, and if not themselves polluted, at least open to the danger of pollution. And all such statements, both written and spoken, have had absolutely no effect on the politicians or on the governmental authorities of Maryland; therefore, today, we are in exactly the same situation that we were ten or twelve or fifteen years ago.

How far that is bound up with bad politics is very difficult to say, but it certainly is bound up with superstition on the part of the oyster dealers and the oyster growers that after all it does not make much difference, that the public does not care, that the public will not force the sanitary authorities to provide proper conditions for the workers, and will not insist on the elimination from the public markets of oysters collected improperly and grown in polluted areas.

Dr. Franklin Royer, Harrisburg, Pa.: The health authorities of the state of Maryland have cooperated with us in Pennsylvania in trying to determine the sources of infection in several outbreaks due to oysters in our state within the past year. Each time we have made a report to Dr. Fulton of the possible source of pollution he has given us the facts in the most open way, and has even suggested, in one or two instances, that the state of Pennsylvania, if possible, should quarantine against oysters coming in from that particular area in Maryland. We have sent to the public health service reports of several outbreaks, and have had a good deal of correspondence with health authorities in other states, so that their results might be checked against ours. We had one outbreak among the patients in one of our state sanatoriums for tuberculosis in which seven nurses were infected in a way that directly and easily pointed to infection by oysters.

We had another outbreak of twenty-five or thirty cases in a small community directly attributable to oysters infected probably in the shucking houses. The work of checking up the oyster industries and of policing the harvesting areas is certainly a big work, and a state with such extensive oyster industries as Maryland should undoubtedly furnish the funds to the health department for proper policing and absolute control, not only of the areas in which oysters are lifted, fattened, or kept until ready for shipping, but certainly the oyster shucking houses should be supervised rigidly. I hope health authorities everywhere will use their influence to encourage the Maryland legislature to give the state health authorities all of the money needed to give that supervision.

Dr. Hugh S. Cumming, Washington, D. C.: There has been an extensive outbreak of typhoid due to Maryland oysters, but so far as I can ascertain, the infection was traced. A very clever man in the service has taken up the work, and has decided that practically all of the cases have come from one negro shucker and one shucking house, so that after all it does not show that there are very many Maryland oysters polluted. It was a very unfortunate occurrence due to oysters handled by a man who shipped oysters all over the country, and so this particular outbreak was very widely spread, although it came from one local region. I want to say, to reassure the gentlemen who like oysters, that I have found in literature nowhere, either in this country or in cases reported abroad, typhoid fever due to oysters which came directly from the open ground; all of the cases reported have come from floated oysters, from oysters in the immediate vicinity of sewers or from insanitary conditions in the shucking houses. Dr. Ford and Dr. Fulton should not be pessimistic about Maryland, because some other states are a great deal worse than Maryland. Their oysters are in good condition, except in two very small areas, but the conditions are such that they will be remedied this coming winter. There has been additional legislation in Maryland. A very encouraging thing is the attitude of the large oyster dealer. I had an enthusiastic letter the other day from the president of the National Shellfish Growers' Association in which he stated that the governor of Maryland had placed him on a commission and the first thing he wanted to do was to get at the two particular areas he mentioned.

Treatment of Chronic Bone and Joint Disease.—The awful scourge of tuberculosis is so foul a blot on some of the fairest spots in the country that one cannot but wonder why, in the efforts which have been so perseveringly made in the last ten years to cope with it, provision has not been made for an aspect of the disease which every surgeon dreads. It would be the greatest of practical charities to institute hospitals, not for incurables, but for those cases which cannot be thoroughly treated under the present system of hospial work. No one can blame the authorities in a hospital for looking askance as a case which meets the eye month after month, and sometimes for even a year. The institution of a proper refuge for a large and altogether pitiable part of our population is a work which should invite the sympathy and hearty cooperation of all who really mean to help in the fight against tuberculosis. Till we have such a place no surgeon can even venture to predict a fair result to treatment of hips and bones.—*Medical Press and Circular*, 1916, cii, 487.

THE METHOD OF TONSILLECTOMY BY MEANS OF THE ALVEOLAR EMINENCE OF THE MANDIBLE AND A GUILLOTINE

AFTER SIX YEARS' EMPLOYMENT *

GREENFIELD SLUDER, M.D.
Fellow of the American College of Surgeons
ST. LOUIS

The history of tonsil surgery is clear beginning with Celsus, 10 A. D.[1] He describes finger enucleation and sharp knife enucleation. Surgeons of the middle ages at times did tonsillotomy and at one time used a ligature, for probably a tonsillectomy, by sloughing. The

Fig. 1.—Jaw bone from 4½ to 5 years. Internal surface.

first push blade guillotine was introduced in 1827 by Physic for tonsillotomy. The pull blade guillotine of Fahnestock in 1832 was also for tonsillotomy.[2] I have not been able to determine when blunt dissection or dissecting and snaring was introduced. I described guillotine enucleation to this society June 9, 1910.

The various enucleation procedures are summed up under the headings of (1) the finger dissection, (2) the sharp knife dissection, (3) dissection and snaring, and (4) guillotine dislocation.[3] Blunt dissection may be classed as a subdivision in the finger or sharp dissection classes. For the finger dissection the instrumentarium has remained unchanged. For all other methods it has been greatly multiplied and greatly complicated. Many small modifications have also been introduced in the primary subdivisions of methods.

The antiquity of the first three, together with the infinite variation and multiplication of the instruments and the almost infinite (and growing) small variations in their technic is to me proof that the "standard (100 per cent.) tonsillectomy," as recently proposed, has not yet been attained by the enthusiastic advocates of any one of them. I do not believe a standard (100 per cent.) tonsillectomy can exist.

A discussion of methods may be concluded with the suggestion that each surgeon should use that which he is best able to execute. For those satisfied with none of the older ones, and those, in their developmental years, who must learn *some* method, the guillotine technic offers the advantages of (1) speed, (2) minor (or any) anesthetic (nitrous oxid[4]), (3) better cosmetic results as a rule, (4) small bleeding, and (5) performance by sense of touch independent of sight.

The principle on which it rests is that the tonsil by means of the firm metallic ring placed behind and below it is dislocated forward and upward or upward and forward to a place where it may be manipulated by the finger tip. The point of vantage to which it has been brought is the alveolar eminence of the mandible, made by the last formed tooth in its socket. Below, the eminence is limited by the mylohyoid line. On the civilized jaw, the body below the line usually presents a concavity of more or less depth. On the aboriginal American Indian's jaw usually this is almost or quite absent. The body is heavier and forms with the eminence usually a broad convexity, ending below with the lower line of the jaw. Such a jaw permits of this tonsillectomy being performed with one hand. The finger tip is not needed to help push it through. All degrees of intermediate modification exist. On edentulous civilized jaws, the combination of the absence of alveolus with the concavity below the line makes a set of conditions that should be carefully borne in mind by the surgeon. The ring of the guillotine for such a case should be thin in order to get into the concavity and scoop out the (usually) small fibrous adherent tonsil. The aperture should be small in order better to manage the tonsil on the remnant of the eminence.

Easy cases may be managed often by a surgeon who has only a hazy memory of this anatomy; but as the difficulties of the case increase, so does the necessity of accurate knowledge of this anatomy and its variations. In this connection I feel that it is most desirable to emphasize again this structure and its changes according to age. Figures 1 to 7 show jaws from early childhood to age. In order to get the tonsil into the ring it is plain that with the younger jaws the guillotine must cross the mouth at a (varying) greater angle. It is also to be observed that in order to utilize the eminence to most advantage the long (transverse) axis of the ring must be parallel to the long axis of the eminence. This necessitates the shaft of the guillotine taking as its final direction 45 degrees downward from the line of the alveolus regardless of what may be its outward and backward direction. As stated above, the outward angle increases with the youth of the patient.

From a considerable observation of surgeons using this technic, with opportunity to see their difficulties and failures, I feel that the importance of this final

Fig. 2.—Jaw bone at 5 years. Internal surface.

downward turning of the shaft cannot be too much emphasized. It permits a certain hold of the lower part of the tonsil on the eminence, while the upper part may be accurately manipulated by the finger tip; otherwise the lower part escapes the blade. The surgeon who fails oftenest is the one who keeps the shaft nearly parallel with the alveolus. He seems to forget to take his bearings on the mandible. As soon, however, as he has been shown the final downward angle for his shaft, his difficulties become less and his failures fewer. An operator of reasonable skill then soon learns to remove any tonsil under any conditions, provided he bears in mind the possible changes in the eminence, and his instrument is one that lets him work to best advantage.

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* I gave this anatomic marking the name of "the alveolar eminence of the mandible" and described it in detail in THE JOURNAL, March 25, 1911, p. 867.

* Read before the Section on Laryngology, Otology and Rhinology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. McKenzie, Morell: Diseases of the Throat and Nose, London, 1880.

2. The scheme of the guillotine is much older than these dates as brought forward recently by Dr. Stanton Friedberg in a scholarly historical sketch of the instrument (Ann. Otol., Rhinol. and Laryngol., 1913).

3. This classification was first made by G. L. Richards.

4. The special advantages of nitrous oxid for this surgery were emphasized by C. A. Gundelach (Interstate Med. Jour., November, 1911).

The greatest misfortune which has befallen this technic is the modifications of the instrument. The instrument which allows the surgeon the greatest advantage under all conditions and gives the highest percentage (99.6 per cent. perfect results), according to my understanding, is the original guillotine of Physic that has been adapted to these special usages. It should be strong with a thin elliptic ring and a dull blade, not blunt, but merely dull. The capsule of the tonsil will slip out from under a blunt blade even after it is properly engaged.

It is evident that for the purpose of dislocating the tonsil from its soft hollow bed and bringing it forward and upward or upward and forward, thereby to utilize

Fig. 3.—Jaw bone from 8 to 10 years. Internal surface.

the alveolar eminence as a more advantageous place from which it may be manipulated and put through the ring, a ring and shaft and handle are the essentials for the instrument. These features have been retained in a large variety of modifications, which may be summarized as follows: those which retain the push blade and modify other parts, for example, (1) Sauer's[5] set screw, Ballenger's[6] handle and LaForce's[7] instrument; (2) those which utilize a pull blade, as Jenning's[8] instrument, and (3) those in which a snare wire is substituted for a cutting blade, as Beck's[9] instrument and its modifications.

The original simplest model to my mind has the great advantage that it allows the freest movement of the wrist and at the same time retains the strength of the flexors. It also provides a rigid closing ring, whose still point is on the eminence. All modifications sacrifice more or less both of these advantages. When the movements of the wrist are interfered with, the certainty of performance is decreased and the possibility of removing small pieces that may escape the first application of the instrument diminishes, and the management of peritonsillar infiltrates becomes less good. For these reasons the modifications again fall into three classes. Sauer's, Ballenger's and LaForce's lose because of their handles. (Ballenger's is the only one for which percentages have ever been given. He stated that it was good for 70 per cent. of the cases.) The other modifications lose because they needs must pull away from the eminence as they come into action. Jenning's model has the advantage of a rigid ring which enables the surgeon to control the tonsil mass under the tip of his finger. This helps him to manage a peritonsillar infiltrate and scars, binding the capsule down. But it pulls away from the eminence as soon as it begins to work, which is a great advantage. Beck's instrument, which is a combination of Tyding's snare tip and Pierce's handle, has the disadvantage of pulling away from both the control of the eminence and the finger tip. Pieces which escape the first application of the instrument cannot be removed by Jenning's or Beck's instruments. Furthermore, both are apt to leave, as a flaw in their performance, a ring of capsule with lymphoid tissue surrounding the wound. I believe this fault impossible of immediate repair by any means. To me it has also seemed the most unfortunate, clinically, because of lymphoid tissue reproduction from it sometimes filling the entire fossa.

An advantage possessed by this technic is that it may be done by sight or largely or wholly by the sense of touch. Dissecting methods must have clear vision, which may be at times difficult or impossible to get. The original guillotine has also the advantage of being the instrument which may be easiest and quickest mastered.

In my original presentation of this technic I made two mistakes. First, I gave the impression that it was simple and easy to execute. I have since concluded that that was most unfortunate. For one who will learn it, it is a matter of close study in anatomy, technic and touch. I say this now as a result of much teaching to undergraduates and graduates. Secondly, I spoke of the plica triangularis as a part of the anterior pillar, saying,[10] "Further examination of the specimen reveals that a little of the free edge of the anterior pillar, including a few fibers of the palatoglossus muscle, is attached to it." The specimens usually show a red margin at the line where the plica is cut, which appears to be muscle, but under the microscope this is shown to be a mistake. At that time I considered the plica to be a part of the anterior pillar, but I now believe with Fetterolf[11] that it is a part of the capsule only that the pillar is made by the palatoglossus muscle. The pillar is preserved by this technic.

This method was developed in almost if not quite every detail by Drs. Whillis and Pybus[12] in England. We worked quite independently of each other, quite unknown to each other. They did not describe the anatomy of the jaw in connection with it or necessary to it.

Fig. 4.—Jaw bone from 11 to 12 years. Internal surface.

Since then the method in contradistinction to the instrumentarium has been modified twice. Drs. Hill and Elfick[13] of England use the dislocation principle, but utilize the tubercle of the maxilla instead of the eminence of the mandible as the point of vantage from which to manipulate the tonsil. The hamulus of the pterygoid, however, is just back of the tubercle, which seems to me to be undesirable, as it is frail and might

5. Sauer, W. E.: Tonsil Guillotine with a Dull Blade, THE JOURNAL A. M. A., May 4, 1912, p. 1335.
6. Ballenger, W. L.: Diseases of the Nose, Throat and Ear, 1912.
7. LaForce, Burdette: Hæmostat Tonsillectome, Laryngoscope, 1914.
8. Jennings, J. E.: A New Tonsillectome, THE JOURNAL A. M. A., May 24, 1913, p. 1620.
9. Beck, J. C.: Tonsillectomy With a Single Instrument, the Tonsillectome, THE JOURNAL A. M. A., Jan. 27, 1912, p. 240.
10. Sluder, Greenfield: A Method of Tonsillectomy by Means of a Guillotine and the Alveolar Eminence of the Mandible, THE JOURNAL A. M. A., March 25, 1911, p. 867.
11. Fetterolf: Am. Jour. Med. Sc., 1912, i, 37.
12. Whillis and Pybus: Lancet, London, Sept. 17, 1910.
13. Hill and Elfick: Minimizing of Hemorrhage in Tonsil Extirpation and Employment of Hemostatic Tonsillectome Jour. Laryng. and Rhinol., 1914, p. 545.

be broken. I have not seen the method used and so desire to emphasize that I make this suggestion only as a possibility. Dr. G. Hudson Makuen also has proposed a method for, as he says, "splitting the capsule." He uses the original model guillotine to secure the tonsil free from its surrounding structures just as in the original procedure, in readiness to "push the blade through." Instead, however, he places a snare wire around the engaged tonsil on the median side of the guillotine and then removes it by the snare. He has explained in detail how this splits the capsule, leaving a lateral layer in the fossa.[14]

Fig. 5.—Jaw bone from 18 to 40 years. Internal surface.

The ring and the blade of the instrument are features of such importance that I feel certain points about them should be brought to your notice. The original text contains a mechanical drawing, to scale, of the guillotine (two sizes) specially adapted to these needs. They have never been changed save for the omission of the copper lining to the ring. The elliptic ring was thin and the blade ground back for 2.5 cm. It has, however, been so often changed by instrument makers in shape (round) and thickened and the blade ground short that I emphasize these faults, so the surgeon may — in fact must — know what is the correct model and not trust to the statements of the instrument makers' salesmen.

Should the ring be thick and the blade ground short there is, when they are closed, a sulcus between them much deeper than when the ring is thin and the blade ground 2.5 cm. back. The deeper this sulcus is, the more difficult it is to feel what is at the bottom of it; and so it happens that small pieces of the tonsil or capsule may have escaped the setting of the instrument and be out of the reach of recognition by the finger tip. This is not true of a thin ring and long ground blade. Omitting the copper lining of the ring permits it to be made a little thinner.

Moreover, the thinner the ring the more certainly will it scoop up a small or soft or difficult tonsil or a tiny fragment that has been left. With a good ring and blade, all fragments are easily removed with the single exception of a small one near the uvula. A surgeon familiar with this point, however, never leaves this fragment.

Complaints have been made that a dull blade takes too much power for a man's hands to make it cut. For this reason a "mechanic's dog" was adjusted[15] to the original model, leaving the model in every way unchanged. It is applied for the last cutting only.

In bearing in mind the importance of the final down turn of the shaft regardless of what may be its outward inclination, much of the difficulty of the technic vanishes. There remains, however, a part played by the sense of touch. This is a small one in the usual case, and its importance may escape the surgeon's attention. It becomes, however, a large part as soon as he meets the peritonsillar infiltrate left in the wake of the various inflammatory throats. Then it is that he must attend carefully to what is under his finger tip. Peritonsillar infiltrates are difficult to recognize before the operation, and may be of any thickness up to 2 cm. and of any consistency up to cartilage. Many times I have successfully managed one of 2 cm. thickness. The management of peritonsillar infiltrates is a matter of experience after the technic is satisfactory for uncomplicated cases.

The original description of the "operative procedure"[10] is in every detail correct and complete. None of it has been changed or omitted.

It is not a matter of force, as some surgeons think. Beginners are apt to employ too much force.

3542 Washington Avenue.

14. Makuen, G. H.: Tr. Am. Laryngol. Assn., 1914.
15. Sluder, Greenfield: A Method of Tonsillectomy by Means of the Alveolar Eminence of the Mandible, THE JOURNAL A. M. A., March, 1913, p. 650.

ABSTRACT OF DISCUSSION

DR. G. HUDSON MAKUEN, Philadelphia: The Sluder method is now more talked about, and deservedly so, than any other method or perhaps than all other methods combined. I was among the first to recognize the value of the procedure and to make practical application of it. Dr. Sluder's revised explanation of the technic leaves nothing to be desired. Many modifications of the instrument have been devised, the chief purpose for which has been the final enucleation of the tonsil after it has once been dislocated from its bed and grasped within the fenestra of the instrument. No one as far as I know has improved on Dr. Sluder's original method of dislocation, which, after all, is the distinguishing feature of the operation. My first and only difficulty with the method, however, was not that it was hard to dislocate the tonsil from its bed and engage it in the instrument but rather that with the comparatively sharp blade of the original instrument and a rapid driving of it through I always had a considerable amount of bleeding, to check which required several minutes of time and occasionally a ligature or two. On account of this excessive bleeding, I concluded that the blade should not be sharp and that it should not be driven home rapidly. Therefore I dulled the blade a little, after which I seemed not to have strength enough in my hand to drive it through slowly and at the same time completely. I tried a snare placed between the instrument and the pharyngeal wall, using the Sluder instrument merely in the place of a forceps for engaging the tonsil, but the snare bruised and in other respects injured the tonsillar pillars, and then I tried placing the snare on the other or inner side of the instrument, which plan I have been using with great satisfaction for the last five years. My modification of the operation has none of the disadvantages of the various other modifications; indeed, its only disadvantages should be regarded as minor ones. For example, it requires two additional instruments, a snare and a pair of

Fig. 6.—Jaw bone at possibly 50 years. Internal surface.

forceps to hold the tonsil after it has been squeezed out of its bed by the wire, and it is also a little more difficult of performance and it requires a little more time. Its advantages, on the other hand, may be summed up in the expression "safety first," and this, I think, must overshadow all possible disadvantages in any operation on any part of the body. When the tonsil is once grasped within the fenestra of the original Sluder instrument it is completely isolated from the surrounding structures, and the wire of the snare hugs it so closely that the gland is squeezed out of its bed together with its very thin capsule, and the only cutting accomplished by it is that of the mucous membrane reflected from the pharyngeal wall over the median surface of the gland. When properly performed, therefore, there can be no injury to the soft parts of the pharynx, and there should be in uncomplicated cases practically no bleeding. Dr. Sluder referred to my claim that this procedure splits the capsule of the tonsil. I think it serves to split not the true capsule but that which is frequently regarded as being the true capsule. In other words, it separates the tonsil with its true capsule from the intrapharyngeal aponeurosis to which the tonsil and its true capsule are closely attached.

Dr. George Paull Marquis, Chicago: The important point in an operation is to select one which will do the work. This operation is a difficult one. I can readily understand that to one who has not tried it it looks easy to stand beside an operator doing the Sluder. He sees the guillotine go into the mouth, the finger follows, there is a movement of the thumb, and in two or three seconds out comes the tonsil.

Fig. 7.—Jaw bone at very old age. Internal surface.

Now these two or three seconds are nothing compared to the time required for a dissection; there is no argument on that proposition at all; nobody can dissect a tonsil so quickly as that. But I have seen men try to do that operation and have seen them mutilate throats. Dr. Sluder says that the technic of the operation is the education of the finger. Educate the finger to replace the eye. Now that is all very well. As I said, I am talking about your doing it, not about him doing it. Please do not confuse that. You do this operation and then wait four or five days or a week and then do another—do you think that will educate the finger so that it will replace the eye? Do you think you will be able to tell by the feeling in there just what you have under the finger at any moment? I would rather trust my eye. I have not been able to train my finger so it will replace my eye, and I do not see how anybody can unless they are doing the work all the time. How are we to decide whether we will do the Sluder or the dissection method? Which method will give the best results? Which will cause the least injury to the tissues? Which can be done in the shortest space of time? If any man can do the Sluder operation and have his work 99.6 per cent. perfect, I have not a word to say. I cannot do it. I can work 99.6 per cent. clean with the dissection method. Some of you may train the finger so that you will not catch the anterior pillar or the posterior pillar, but simply split the capsule and get it out very nicely. I cannot do it. I have wounded the anterior and the posterior pillars. If you take it by the dissection method, simply catching the tonsil and holding it out where it is firm, then all you have to do is to slip the point of the knife under the plica and continue the curve all around, separating the posterior as well as the anterior pillar from the tonsil. It can be done in a couple of seconds. Then by merely turning down the handles of the forceps you can slip the snare over them without releasing them. The great objection to the dissection method is that if you let go of the tonsil after having grasped it you never can catch it in exactly the same way, whereas, if you slip the snare around without loosening the forceps you have the same position, and same view of the free tonsil. My assistant is standing there with a sponge and when the snare is drawn through, the sponge slips in and replaces the tonsil. Preventive medicine is much more efficient than curative medicine. If you do not allow it to bleed you do not have to stop a hemorrhage. You simply replace the tonsil with the sponge and hold it there for a minute; after that is done the pillar is retracted and an iodin solution applied to the fossa. You have not much if any hemorrhage, and I do have a lot of hemorrhage with the Sluder method.

Dr. W. E. Dixon, Oklahoma City: I want to second everything Dr. Sluder said about his operation, or rather his technic, but I use the LaForce instrument which crushes the blood vessels and absolutely prevents bleeding. I have made the same mistake as Dr. Sluder, in that I told men that any one could take tonsils out easily and quickly by this technic. Many of them mutilated the tonsils and pillars and failed to get them out. It certainly is a mistake to use too much pressure against the tonsil and pillars, as it will only tend to bruise the pillars and is not necessary. Dr. Sluder says to bring the tonsil upward and forward. This can be done without force and with very little pressure. Then bring down the dull blade of the instrument, and the tonsil is clamped off. Take plenty of time before the cutting blade is screwed home, and there will be practically no hemorrhage. Again with this instrument, I do not think as much mucous membrane is cut off as with a sharp instrument. Why? Because when you clamp the tonsil off, if you see you have too much mucous membrane, you can take it off and pull the tonsil up so that you have nothing but the tonsil. If too much mucous membrane is removed with the tonsil, so that any portion of the edge of the pillars is denuded, contraction of the tissue is bound to follow, whereas, if the mucous membrane is cut close to the tonsil, there will be no contraction and in 90 to 95 per cent. of all cases it will be difficult to tell that an instrument has been used in the throat any time after healing has taken place.

Dr. E. R. Lewis, Dubuque, Iowa: I have here an instrument for bloodlessly removing tonsils after a scheme of Makuen and Lynch—the double snare method. Two wire loops are carried around the tonsil in the ring of the fenestrated snare-cannula. The distal loop, the one used for enucleating the tonsil, is tightened first, down to about one-half way toward complete separation of the tonsil capsule from its aponeurotic bed, and in that position it is locked by the lock lever. Sufficient tension can now be exerted to pull the tonsil away from the mandible upward and backward toward the midline, so that the intrapharyngeal aponeurosis is lifted into a sort of pedicle, around which pedicle the second (proximal) wire loop is tightened, sufficiently to insure its holding its grasp after the tension on the instrument (upward and backward) has been released. As long as this second wire loop holds the tissues underlying the tonsil firmly in its grasp it constitutes a tourniquet, absolutely preventing any bleeding. The first (distal) loop is now slowly drawn home into the cannula, completing the separation of the capsule from the aponeurosis. The aponeurosis remains puckered in the firm grasp of the second (proximal) wire loop, which completely controls bleeding from all vessels which are severed by the cutting wire loop. This procedure permits removing the tonsil in its capsule, with a minimum of traumatism to the pillars and fauces, without losing one drop of blood.

Dr. W. W. Carter, New York: I have had an experience of upward of 2,000 cases by the Sluder method. I use the original instrument. I do not believe it can be improved on. In my service at Gouverneur Hospital we have operated on small children at the rate of thirty-four cases per hour, and that without trying to break any record. Four anesthetists are used and many of the cases are done under primary anesthesia. I asked my house surgeon recently at what rate we were operating; he said we had done seventeen tonsillectomies in thirty minutes. In all of my cases we have not had any bad results and the tonsils have been enucleated. The only unsat-

isfactory results have been in adults who have been suffering for a number of years from peritonsillar inflammation. You will recall that the capsule of the tonsil is composed of four or five thin layers of tissue which in the young slide over each other very easily. In adults when the tonsils have been subjected to repeated attacks of inflammation these layers are agglutinated and the capsule is firmly united to the surrounding muscular structures. Such cases, I believe, are unsuited to the Sluder method. Such tonsils, after carefully dissecting them away from the pillars, should be removed by the snare.

DR. FRANK E. AUTEN, Belleville, Ill.: I do not use Dr. Sluder's instrument but I appreciate its worth. From 1904 to 1910 I spoke before this body on tonsillectomy versus tonsillotomy. In 1901 Dr. Tydings of Chicago did the first tonsillectomy as a distinctive operative procedure and established the operation for all time. He used a blunt hook and a snare; he afterward substituted his curved knife and snare. I immediately took up the operation in 1902 and have been using it ever since. Dr. Sluder's splendid technic and most magnificent instrument is all right in the hands of men who know how to use it. There is one kind of tonsil that in my judgment you can remove only in one way, and that is in the old peritonsillar cases in which the capsule and the muscle are one. In these cases the dissection method and the snare are the best. This technic will remove any tonsil. In the past fourteen years I have taken out many tonsils by this method. While in London I saw a surgeon working who had removed over 4,000 pairs of tonsils with a simple artery forceps, with beautiful results. Many men are operating with many different technics and yet all are getting fine results. That technic which best fits the man is the one for the individual surgeon to use. It gives me great pleasure to see the almost universal adoption of tonsillectomy as a surgical procedure in the removal of the tonsils. It has done more for the children of the world and many adults than any single operation in surgery. In India and other parts of the world they are doing tonsillectomies. Dr. Edwin Pynchon taught us that a small submerged tonsil was most often a dangerous tonsil; that it was a question of infection rather than the size that should determine the removal of the tonsil. This idea fixed for all time the necessity for complete removal of all diseased tissue, for if the drainage of infectious material into the system was to be stopped it must be done by a clean removal of all of the diseased tonsil.

DR. J. F. BARNHILL, Indianapolis: Three years ago I condemned the Sluder method. I did not know how to do it. I now use the Sluder instrument, the latest one, and follow Sluder's method as nearly as possible, and I believe that my tonsil work is now better than it ever was by the dissection plan. Nearly all tonsils can be removed by this method of procedure. I have tried it over and over again in peritonsillar abscess cases, and it has seemed to me that the success has been nearly the same in these cases as in the cases in which there was only simple inflammatory hypertrophy. I have also employed the Sluder method under local anesthesia. Formerly I did these operations under local anesthesia with a snare. I wondered if they might not be done just as easily with the Sluder, and I found that such was the case; the patients complain of no pain, the operation is quickly done, and there is as little bleeding as by any other method of which I know. The final result is quite satisfactory, and I am sure that those who try it with a local anesthetic will find it very satisfactory. I have wondered as to whether in certain cases, in which there is already some involvement of the cervical glands, if the necessary amount of pressure on the tonsil by the Sluder method in lifting it up might cause some recurrence of an infection that already existed prior to this operation. I have seen a few cases in which I believe that such had been the case. It is my present belief that the Sluder method offers all of the good points offered by any other method, can be carried out in less time, and gives better end-results.

DR. H. W. LOEB, St. Louis: I was very much interested in the remarks of some of the speakers as to the difficulty of learning the Sluder technic. I had difficulties in the beginning, but I had also to learn to dissect the first tonsil right. I want to refer for a moment to a method that is being used by many of Dr. Sluder's followers, including myself, who have not the strength that he has in the thumb, and that is stripping the tonsil. After the tonsil is pushed through the ring it is then turned down toward the larynx and with the finger the tonsil is stripped away from the palate. That has been a most satisfactory procedure in connection with the Sluder method.

DR. WILLIAM S. TOMLIN, Indianapolis: The specimens Dr. Sluder presented to us at St. Louis six years ago compare very favorably with those he shows us today, evidencing that he was doing the operation as well then as he does it now. I am also very glad to hear him say that he considers the operation a very delicate and difficult one, as I felt for a long time that I certainly must be very clumsy, for I am free to say that it took me at least two years to feel thoroughly sure of removing each and every tonsil at the first attempt. One point I want to make especially, and it was just mentioned by Dr. Loeb, is the "stripping of the tonsil." That I consider a very important part of the operation for two or three reasons. In the first place, it does away with the necessity of using any dog or other mechanical device for finally removing the tonsil from its moorings. In the second place, if it is done properly with good technic it will accomplish the same purpose as is being attempted by Dr. Makuen in the attachment of the snare. If the tonsil be drawn well up out of the bed, the knife just sufficiently forced against the anterior pillar at its conjunction with the capsule, stretching the peritonsillar tissue, coincidentally sliding the knife home you get a clean capsule and leave the round of the pillars intact with the one combined movement. Another thing about the peritonsillar abscesses: I have seen cases where there was an extraordinary rise in temperature when there had been peritonsillar pus. When this is the case I take a sharp knife and see that drainage is made through the supratonsillar tissue for its discharge. This will often obviate postoperative rise of temperature.

DR. CULLEN F. WELTY, San Francisco: I have not used Dr. Sluder's method because I have been satisfied with what I have been doing. I wish to say again for the Sluder method or any other method, that I do not believe it will serve well where the tonsils have been operated on before. Others have had peritonsillar abscess! These are the ones who come to me, and some cannot be operated by any procedure that depends on dislocating the tonsil into the ring of the instrument. Rather than complicate my instrumentarium I have decided on the method that is known as the procedure of Markham of Chicago, and I have no reason to change it yet.

DR. E. E. HENDERSON, Chicago: I first saw Dr. Sluder demonstrate this instrument six years ago. Since that time I have been using it. There were a few failures at first due to faulty technic where we had submerged or peritonsillar adhesions to deal with. Now that we understand Dr. Sluder's method better and have developed the sense of touch, we very seldom encounter a failure in the removal of any type of tonsil. The rapidity and remarkable dexterity one can acquire by using the Sluder instrument is wonderful. Another great advantage obtained by the use of this instrument is in gas analgesia, using the dental type of inhaler, requiring only the minimum of time for the operation, thereby lessening the shock to the patient, also avoiding aspiration of septic material into the lungs. Again we are very much in favor of a fairly sharp blade, as a clean cut with a sharp instrument diminishes the amount of trauma and, in our experience, lessens the hemorrhage.

DR. OLIVER TYDINGS, Chicago: I started the dissection work on the tonsil on account of operating on my wife with the cautery. Pynchon taught me the use of the cautery, but I thought there should be a better method, so I worked out the dissection. At first I was very much alarmed on account of the fear of hemorrhage, but since I became more familiar with the operation I do not fear that so much, and I think in the doing of any kind of work our patient is entitled to the best skill of the operator. There is a certain proportion of tonsils which can be taken out by almost any method, but I deny that any man lives who can take out as many tonsils,

day after day, by any other method than careful dissection, without doing injury, particularly when they are rushing them through at the rate of thirty-four an hour. When you take into consideration that that means less than two minutes for doing this work, a work requiring a great deal of skill—I tell you that the superficial examination cannot be as perfect as it would be if you are doing careful work. Whenever you are rushing them through at that rate, somebody must do careless work. Today I use the same practice and same methods I did in 1904, with one exception—infiltrating around the tonsil. I do not think I have changed my technic at all, but I have changed from a blunt to a sharp instrument in hugging the tonsil. I believe that a great many tonsils can be removed with Dr. Sluder's method as effectively as with any other, provided you will follow the technic of Dr. Sluder; but I know that I can remove that same tonsil, perhaps not as quickly, but I can take it as free from tonsillar attachment, by following the dissection method. If you have adhesions to the pillar you cannot separate it by any method except by leaving an exposed pillar more or less. But that is not the cause of deformity. The cause of deformity is reckless cutting into your pillar; there is where you get deformity. If you separate it carefully you will not have deformities to amount to anything.

DR. W. W. CARTER: Dr. Tydings intimated that the operation could not be done as rapidly and effectively as I mentioned. All the cases operated on in my clinic are examined beforehand; then they are brought back to the hospital for examination one week after the operation. The results have been very satisfactory and we have had no cases of alarming hemorrhage.

DR. OLIVER TYDINGS: I apologize to Dr. Carter. I did not intend to cast any reflection on his veracity, but I venture to say that there is not one operator in a thousand who will accumulate such a speed with as fine a technic in the course of a lifetime. I congratulate the doctor on his efficiency in that line. I know he is particularly expert along more lines than that, and I am glad to pay my tribute to the man who can do these things.

DR. GREENFIELD SLUDER, St. Louis: I did not mean to anticipate this *entire* discussion when I said that the surgeon should adhere to that particular technic that he is best capable of doing. I followed that with the statement that for those not satisfied with old methods, or the man in his developmental years who must learn some new technic, this is certainly a good one. The question of hemorrhage was spoken of, and Dr. Makuen suggests controlling it by the snare. I think the anesthetic has a great deal to do with this. If you do this under profound anesthesia, the bleeding will be very small. If you do it under gas, fill the patient full of a good big meal a few minutes before, and he does not lose his nourishment and he stands three times the amount of strain with the same degree of shock as under ether or any other anesthetic, but the blood pressure is raised and a small immediate bleeding follows. Secondary hemorrhage is rare. I believe that in the whole profession, old and young, there are a good many who will never succeed with this. I think also that there are others who will never succeed with any other method. For him who is satisfied with what he has, let him adhere to it; for him who is not, this may have advantages as enumerated.

Various points have been brought about the bloodless method. We have not had the success that Dr. Lewis has had—that all have been bloodless. They have all bled, and we adhere to the original guillotine, not only because of its advantages but because of its lack of disadvantages. I cannot emphasize too much the importance of the sense of touch. It is a great advantage when you can feel what you are doing, when oftentimes you cannot possibly see.

Medical Ethics.—The public has long ridiculed the restrictions which the medical profession has attempted, with more or less success, to impose upon its own members, but that the public is now reaching a point where it appreciates the righteousness of medical ethics is shown by recent legislation forbidding false and exaggerated advertisements.—V. C. Vaughan, *Science*, Dec. 8, 1916.

THE USE OF FOREIGN PROTEIN IN THE TREATMENT OF ARTHRITIS

A FURTHER REPORT *

JOSEPH L. MILLER, M.D.
AND
FRANK B. LUSK, M.D.
CHICAGO

Last June[1] we made a preliminary report on the use of foreign protein in the treatment of arthritis. At that time twenty-four patients had received the treatment. Since then we have continued its use and now have an additional eighty-five cases to report.

Since our previous communication some additional evidence has appeared regarding the therapeutic action of foreign protein in acute infections. Saxl, Bruck and Kiralihyda[2] have recorded favorable results in typhoid from the intramuscular injection of sterilized milk. Müller and Weiss,[3] with the same agent, have observed marked improvement in gonorrhea and its complications, and Luithlein has obtained similar results with horse serum. We have shown that chicken serum in doses of from 3 to 6 c.c. given intravenously in typhoid fever will at times bring about a crisis in the same manner as the typhoid vaccine, and that the results with proteose in typhoid compare favorably with those obtained by the use of typhoid vaccine.

In all of the eighty-five cases reported in the present series, the patients were treated at the Cook County Hospital. In the acute cases precautions were observed, in regard to preliminary rest in bed before beginning the treatment, in order to eliminate the improvement which might and often does follow this simple procedure. Somewhat smaller doses (from 40 to 75 million) were given to the patients in this series. We have prepared our own vaccines, but after the usual methods. Since our first report a number of communications have been received from physicians, stating that they were unable to obtain any constitutional reaction in the prescribed dosage with commercial vaccine. This was investigated, and it was found that frequently a dosage of from 300 to 500 million of the commercial vaccine is required to give the same reaction as from 40 to 75 million of the preparation we were using. In only a few instances have we used proteose or pollen protein, but the results obtained would indicate that with the proper dosage, improvement similar to that observed after the use of the typhoid vaccine will take place. Following the observation of Jobling and Petersen that the iodids by fixing the antiferments in the blood serum would facilitate the action of the ferments, we gave, in some refractory cases, repeated intravenous injections of sodium iodid, from 0.66 to 3.3 gm., in conjunction with the vaccine, but failed to observe any beneficial results.

Acute Arthritis.—In our present series there were forty-five cases of acute arthritis, four of which were gonorrheal, and the period which had elapsed from the onset ranged from two to forty-five days. Previous to coming under our care, thirty-three had been under more or less active drug treatment, usually with salicylates. Several were receiving large doses of salicylates, from 1 to 2 gm. every four hours. Of those

* From the Medical Clinic of Cook County Hospital.

1. Miller, J. L., and Lusk, F. B.: The Treatment of Arthritis by the Intravenous Injection of Foreign Protein, THE JOURNAL A. M. A., June 3, 1916, p. 1756.

2. Saxl, Bruck and Kiralihyda: München. med. Wchnschr., 1916, lxiii, 511.

3. Müller and Weiss: Wien. klin. Wchnschr., 1916, xxii, 249.

who had been under previous drug treatment, twenty-nine reported that they had not improved under this treatment, and four had been moderately benefited. With typhoid vaccine, twenty-nine of the forty-five patients recovered promptly; that is, the pain, redness and swelling disappeared in from one to five days, and usually within from twenty-four to forty-eight hours. From one to four injections were necessary to bring about these results. Of the remaining patients, eight showed great improvement with only some stiffness or slight pain remaining. Six showed only moderate improvement, and in two no benefit was derived from the treatment, although one of these received eleven and the other thirteen injections. Nine of the patients had recurrence, five of those discharged as cured and four in those discharged as improved. Seven of these were reinjected and either recovered or showed marked improvement. It is highly probable that the number of recurrences reported is too low, as a considerable number of patients entering a hospital of this character have no permanent abode, so that it was quite impossible to follow them up after they were discharged. It is quite probable, however, in case of relapse that the majority of these patients would return to the County Hospital on account of its being a purely charitable institution. When a patient after leaving the hospital could not be traced, if he failed to return later on account of recurrence, he was placed in the list of cured. This renders the precentage of recurrence inaccurate. In the four acute gonorrheal cases in this series, less benefit was derived by the treatment than in those of other origin.

Subacute Arthritis. — Under this group were included those cases which might possibly be classed as mild acute arthritis, running a prolonged course. Others had an acute onset followed by a prolonged but moderate degree of disability. Four months was the maximum duration of the infection in those included in this group. Twelve patients in all were treated; in ten, the condition cleared up in from three to five days after from one to four injections, although in two of them there was still slight stiffness or soreness in one or more joints at the time the treatment was discontinued, clearing up, however, a few days later. Two showed marked improvement after two or three injections, but subsequent injections failed to bring about further improvement. Among those discharged as cured, recurrences were recorded in two: one of these recovering after further injection; the other patient did not return to the hospital for further treatment. In this group there was one of gonorrheal origin.

Chronic Arthritis with Marked Acute Exacerbation. —Nine cases belonging in this group were treated, the patients entering the hospital on account of the acute exacerbation. In eight the acute symptoms cleared up promptly with from one to three injections.

Chronic Arthritis.—Nineteen patients with arthritis of from a few months' to several years' duration were included in this list. Only those cases were selected in which there was definite evidence of activity, and ankylosis was not marked. Ten of these patients after from one to five injections showed a definite improvement, the acute tenderness and discomfort on motion was much relieved. The patient became less helpless. As a rule not all the affected joints were benefited. The results, however, were such that it would seem the treatment had been actually beneficial. Not all of these cases have been followed, but there are several in which, after the lapse of several months, the improvement has been maintained. Five showed moderate improvement, and four were not benefited. The maximum number of injections given any of these patients was thirteen, being given daily in the beginning and later every two or three days. In five patients included in this group the arthritis was apparently of gonorrheal origin, and three of these showed such marked improvement that they might be pronounced as cured. This is in contrast to the resistance to the treatment of the acute gonorrheal cases. One of these gonorrheal cases was of seven months' duration, and for three months previous to entering the hospital, the patient had been compelled to use crutches. After three injections he was able to get out of bed without assistance, and up to the present time (four months) has not had a relapse. It is the very striking results obtained in a few cases of this character which have led us to believe that in certain instances the results obtained cannot be equaled by any other of our present methods of treatment. The results in the cases of chronic arthritis are on the whole, however, not especially striking. The tendency to recurrence is great, not unlikely owing to the persistence of a focal infection. It is essential, therefore, that when this method of treatment is employed, it be preceded by the usual efforts first to locate and remove the focal infection.

We reported in our previous paper that the beneficial results in acute arthritis were confined to the joints, the complicating endocarditis or pericarditis apparently not being affected. This statement, we believe, should be modified as, judging from the complete disappearance of fever and rapid return to normal of patients with arthritis and acute endocarditis, it would appear that the endocardial involvement had also been controlled. This, of course, applies only to the benign type of endocarditis. Published reports on the effect of foreign protein (milk, horse serum) on gonorrhea and its complications go to show that both the acute and the chronic ureteral and prostatic processes are apparently greatly benefited. We had one patient with gonorrheal arthritis complicated by iritis of several months' duration who after two injections of typhoid vaccine showed marked improvement in his arthritis and a complete disappearance of the iritis.

Unfavorable Results.—The reaction provoked by the intravenous injection of the typhoid vaccine is severe. There is always a very marked rise in temperature, and with few exceptions a marked chill. The headache as a rule is severe, and nausea of a few hours' duration is not infrequent. In three cases, all alcoholics, delirium developed at the height of the fever, in one case continuing for thirty hours. Marked dyspnea was observed in a few cases. In only five of our patients did we deem it advisable, on account of the violence of the reaction, to discontinue the treatment after a single injection. We have not had any fatalities as a result of the treatment, but it should be borne in mind that evidence of poor cardiac power or hypertension was considered a contraindication to the treatment, and such patients were not injected. When we consider that typhoid vaccine in much larger doses has been given in hundreds of cases of typhoid by various individuals, with only a few fatalities, and then most frequently when enormous doses were given (from 500,000,000 to 4,000,000,000) it relieves in a measure our apprehension. There is no question, however, that the violence of the reaction is a very serious

objection to the adoption of this method of treatment. Even if the results are not serious, the inconvenience is so great that many patients would justly object to repeated injections. That the intravenous injection of typhoid vaccine has a decided effect in many cases of arthritis, especially of the acute type, appears as practically certain. That all patients are not benefited does not necessarily reflect on the specificity of the treatment, as in typhoid fever the intravenous use of vaccine is without appreciable effect in about 40 per cent. of the cases.

Whether the intravenous use of foreign protein in typhoid and arthritis will be retained as a therapeutic measure depends largely on whether the violence of the reaction with the inconvenience and possible danger to the patient may be considered as outweighing its beneficial results. Perhaps further investigation will show that there are other micro-organisms still more active in this respect than the typhoid and perhaps having greater therapeutic value, but also giving rise most likely to even more violent toxic reactions.

122 South Michigan Avenue.

A STUDY OF SODIUM CACODYLATE IN THE TREATMENT OF SYPHILIS*

H. N. COLE, M.D.
CLEVELAND

In spite of the attempts of several workers to disprove the claims made for sodium cacodylate as a powerful remedy in the treatment of syphilis, the drug is still extensively used by the general practitioner and by many specialists in the treatment of this disease. Yet Nichols,[1] notably, by his work on rabbits, has proved that it is worthless as a spirocheticide.

To clear up the question as to its value, we undertook the study of its action[2] in a series of selected syphilitics in our wards at the Cleveland City Hospital.

At first we started with a dose of 0.25 gm. intravenously, followed by a dose of 0.45 or 0.5 gm. every five days up to five or six injections. After one or two trials, however, we were convinced that we would have to use it either in larger doses or oftener if we were to obtain results. The latter alternative was chosen, and we employed it at first every four days and later every three days. In all our work we were guided by Prof. Torald Sollmann of the Department of Pharmacology of the Western Reserve University School of Medicine.

The patients were together in wards, and it was not always possible to treat them as long as we wished, as they took treatment into their own hands when results were not obtained. Otherwise they were all carefully studied, and collectively they showed most of the symptoms found with primary, secondary and tertiary syphilis, several having an involvement of the central nervous system. Our routine lumbar puncture for syphilitics, if not mentioned, was normal.

A short summary will be given of each case and conclusions then drawn.

* From the Department of Dermatology and Syphilology of the Western Reserve University, School of Medicine, and of the Cleveland City Hospital.

1. Nichols, H. J.: Salvarsan and Sodium Cacodylate, THE JOURNAL A. M. A., Feb. 18, 1911, p. 492.

2. The drug for these experiments was put up in glass ampules of 0.45 and 0.5 gm., respectively, and was kindly furnished by H. K. Mulford Company and Parke, Davis & Co.

REPORT OF CASES

CASE 1.—C. B., man, aged 46, who had recurrent syphilis with severe mucous membrane involvement of throat and mouth, syphilitic laryngitis, condylomas around the anus and scrotum and a nodular syphilid on each forearm, whose blood Wassermann was strongly positive, the spinal fluid showing 26 cells per cubic millimeter, the Noguchi test positive, and the Wassermann positive with 0.2 c.c. of fluid, was given an intravenous injection of sodium cacodylate of 0.25 gm., May 17, 1916, and 0.5 gm., May 20, which was repeated every three days until he had received six. By this time the tertiary lesions on the arms had begun to desquamate. The laryngitis, patches in the throat and condylomas, however, were still present, and the cell count on the spinal fluid was 19, the Noguchi and Wassermann tests being positive. The patient demanded salvarsan and mercury, and further sodium cacodylate was refused.

CASE 2.—A. R., man, aged 21, who had secondary syphilis with severe mucous patches in the throat, and in whom the blood Wassermann test was strongly positive, was given an injection intravenously every four days for four injections, when red cells and albumin appeared in the urine, and further treatment was out of the question. His symptoms were, if anything, worse, but subsequently they cleared up very rapidly under mercury intramuscularly.

CASE 3.—H. M., man, aged 24, who had severe primary and macular syphilis with alopecia, marked mucous patches in the mouth and throat, condylomas of the anus, and complicating psoriasis, from Jan. 12, 1916, to Feb. 10, 1916, was given sodium cacodylate intravenously every five days for six doses. Two days after the third dose the condylomas had partially cleared up, but the mouth was worse, and the patient refused more than six injections. There was rapid recovery under mercury and salvarsan.

CASE 4.—F. S., man, aged 39, who had a marked tubercular or nodular syphilid of both elbows, whose back was entirely covered with one large lesion, patches in mouth, the pupils unequal, reacting poorly, spinal fluid cell count 76, Noguchi positive and Wassermann positive with 0.1 c.c. of fluid, was given sodium cacodylate, 0.5 gm., intravenously every four days for six doses. The lesions on the arms and back cleared up partially, but the patches remained in the throat. The cell count on the spinal fluid was 65, the Wassermann and Noguchi reactions still the same. As the urine showed a few red cells and albumin, we were forced to stop further cacodylate.

CASE 5.—W. C., man, aged 32, who had a papular syphilid, severe mucous patches in the mouth and throat, all cervical glands greatly enlarged and under the right jaw like hen's eggs, from Jan. 20, 1916, to Feb. 8, 1916, received an injection every five days of 0.45 gm. At this time the enlarged glands and patches were worse than ever, and the patient refused further treatment. There was quick recovery under mercury and salvarsan.

CASE 6.—P. S., man, aged 40 (?), who had mucous patches in the mouth and on the tonsils, condylomas, and a large nodular or tubercular syphilid on the right side of the chest, received five injections of sodium cacodylate, one every four days. The lesion on the chest seemed to be somewhat better, but the patches and condylomas showed little or no change, and treatment was stopped.

CASE 7.—L. G., negro man, aged 28, who had marked mucous patches in the mouth and throat, condylomas around the anus and scrotum and a circinate syphilid of the face and neck, received six injections of sodium cacodylate, one every three days. The circinate syphilid was desquamating and partially cleared up, but the condylomas and patches in the mouth remained, and on account of the patient's race we did not deem it well to continue further treatment.

CASE 8.—G. M., man, aged 30, who had a primary lesion Jan. 5, 1916, sore throat February 24 and macular eruption March 10, and entered the hospital March 15 with secondary eruption, patches on tonsils and uvula and scar on the penis, received five injections of sodium cacodylate with absolutely no improvement in the condition, when he demanded mercury and salvarsan. The condition then cleared up rapidly.

CASE 9.—J. D., man, aged 25, who had a maculopapular eruption, primary lesion on an edematous, phimotic penis, mucous patches on the left tonsil, and acute syphilitic arthritis of the left elbow, at four day intervals received five injections of sodium cacodylate, each 0.5 gm. The arthritis in the elbow cleared up after three injections, and the eruption partially disappeared. The throat seemed to get worse, and the patches spread to right tonsil and uvula. The patient refused further cacodylate. Recovery was rapid with salvarsan and mercury.

CASE 10.—H. E., man, aged 21, had a chancre four months before admission, and long standing sore throat and headaches, coming on at night. There were a generalized papulosquamous syphilid of the miliary, follicular type; marked alopecia syphilitica; mucous patches in the mouth and throat, and condylomas around the anus. The spinal fluid cell count was 65, Noguchi test positive, and Wassermann positive with 0.1 c.c. of fluid. The patient received an injection of sodium cacodylate every five days at first, and later every four days until he had taken seven. The headaches cleared up and the eruption partially disappeared, but the enlarged tonsils covered with patches and condylomas remained. The cell count on the spinal fluid dropped to 25, but the Noguchi and Wassermann tests remained as before. Because of the condition of the throat it was deemed advisable to turn to mercury and salvarsan, after which the improvement was very rapid.

CONCLUSIONS

Careful analysis of our findings proves the contention of Nichols and others. Sodium cacodylate is worthless as a spirocheticide; yet many physicians are depending on this drug today in the treatment of syphilis. Moreover, there is a widely advertised proprietary product on the market, venarsen, claimed to be of great value in the treatment of this disease, the main constituent of which is sodium cacodylate. And the dosage is not as large as we have employed.

We believe we were justified in saying that:

1. At the utmost, sodium cacodylate has perhaps a slight action on the papular and nodular syphilids, but in no case is it to be compared with even mercury and potassium iodid alone. It is probably to be explained entirely from the tonic action of the arsenic on the system.

2. In cases of syphilis with mucous patches it is worse than useless.

3. In one of our cases, Case 10, there was a drop in the spinal fluid cell count from 65 to 25, but the Wassermann and Noguchi tests remained positive, and Cases 1 and 4 with cerebrospinal involvement, showed practically no change.

4. The contention may be raised that we did not employ large enough doses, 0.5 gm. every three days. Routine urine examinations in Cases 2 and 4, however, out of a total of ten studied, showed red cells and albumin, the one after four and the other after six injections. After consultation with Dr. Sollmann, therefore, we decided to use no larger dosage, leaving it to others more courageous.

5. The routine positive blood Wassermann in all ten cases was in no instance changed to negative.

2069 East Ninth Street.

Diphtheria.—In the various countries of the world the average annual death rate from diphtheria during the most recent five-year period for which data are available, has ranged from 6.8 per 100,000 of population in Chile and 7.0 in New Zealand and the Netherlands, to 19.0 in the registration area of the United States, 22.6 in Prussia, 25.9 in Austria and 40.1 in Serbia. There is no conclusive evidence that diphtheria as a disease is decreasing. On the contrary, the weight of evidence is favorable to the view that it is increasing.—F. S. Crum, *Weekly Bull. Dept. Health*, New York.

HEALTH LABORATORY ORGANIZATION*

WILLIAM H. PARK, M.D.
NEW YORK

The opinions expressed in this brief paper are founded on my experience as director of the health department laboratories of New York City for the past twenty-two years, during which time the bacteriologic laboratories have increased from a force of four employees to one of over 200.

The health laboratory in a small city will, from necessity, carry out all the public laboratory work. The health investigations and those required to test contract materials are so varied and are done with such different purposes, that a separation into two distinct laboratories is desirable as soon as the city has become fairly large and the expense can be afforded.

It is apparent that many necessary examinations, such as asphalt to be used in road making, have no relation to health and should not be charged to the expense of protecting the health of the community, nor should those interested in health problems be compelled to divert their attention to such examinations.

The question of whether it is wise to unite the chemical and bacteriologic laboratories under one head, or to separate them, can only be answered after knowing the local conditions. The same is true as to whether the water examinations should be done in the health laboratory or in one connected with the department of water supply.

Many, without considering, think that the laboratories are something apart from the other divisions of the health department. This is manifestly not so. The bacteriologic and chemical examinations of milk are made for and controlled by the food divisions and the diagnostic bacterial examinations are a part of the cost of handling the communicable diseases.

The laboratory examinations of water are a part of the work of the bureau controlling the water supplies.

If the production of serums and vaccines is undertaken, it relieves the health department from purchasing these products. It would be foolish to provide the means for each division to have a separate laboratory, and so necessarily, for the sake of economy, all these subdivisions are united in a central laboratory.

When the laboratory is small, the chemical and bacteriologic laboratories are usually united, but when the laboratory becomes extensive, a separation frequently develops, each division being placed in charge of an assistant director, or the general chemical work being removed to the supervision of the food division.

The chemical laboratories in New York City have, for instance, sometimes been united with the bureau of bacteriologic laboratories and sometimes with the bureau of foods, the chemist in charge reporting to the director of whichever bureau the laboratories happened to be assigned.

The fact that a laboratory carries on the technical work for all the activities working for the health of the public explains why in the largest cities some of the health laboratory work may be done by separate laboratories not connected directly with the central health laboratory. For instance, the care of the water supply is frequently under a separate bureau of the city. It is often desirable that the examinations made

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to determine the efficiency of the safeguards should be by a small laboratory devoted solely to the examination of water and reporting directly to the department of water supply. The health laboratories would still do water examinations for other purposes.

National and state governments, because of different departments, tend to subdivide still farther. This subdivision, if not carried too far, is desirable, for in this way the laboratories are responsive to the needs of the departments of which they form a part.

The activities of health departments have broadened greatly in the past twenty years. The New York City board of health has always regarded that all matters connected with scientific investigation of infectious diseases, as well as routine examinations, were within its province.

This conception of the scope of the duties pertaining to a sanitary board has come to be adopted by all enlightened communities. A percentage of the laboratory budget in New York City has always been applied to research investigations. There are, in my opinion, the best of reasons for this, outside of any desire to do a part in adding to the general amount of knowledge:

1. Practical additions are thus frequently made to our knowledge concerning the prevention of disease which can be immediately applied.

2. Laboratory workers of greater ability can be obtained where some time is allowed for research investigation.

3. The workers, being of a higher average type and trained to carry out investigation, are better able to test the value of new discoveries, and if found good to adopt quickly the new measures.

The tendency of the times is to demand such records that the cost of each variety of laboratory work can be estimated so as to determine the relative value of different lines of work. Although for most scientific workers this is irksome, still the laboratory must yield to this demand, both because it is probably necessary for efficiency and because it is required by those who control the expenditure of a city's money before approving of its budget.

In the larger laboratories the cost is frequently itemized to cover the separate functions. The bacteriologic laboratories, in New York City for instance, have the functional divisions given in the accompanying table.

FUNCTIONAL DIVISIONS OF BACTERIOLOGIC LABORATORIES

Function	Number of Workers
1. Administration	17
2. Diagnosis (diphtheria, typhoid fever, syphilis, etc.)	58
3. Production of serums and vaccines	57
4. Applied therapy (administration of serums and vaccines)	15
5. Microbial sanitary examinations (milk, water, etc.)	22
6. Preparation of mediums	24
7. Special investigations (on practical subjects directly pertaining to the prevention and treatment of communicable diseases)	15

These divisions are in many respects artificial and overlap each other, but they are the best that we have been able to devise. In an active laboratory the subjects under investigation and the practical applications are always shifting.

Those interested especially in the subject of organization and cost accounting are apt to demand that these functions be separated, not only for budget purposes, but actually. If they had their way, the director and first assistant director would confine their time wholly to conferences with the commissioner or medical officer and the heads of the bureaus and to supervision of the other employees. Those holding technical positions would do either routine or research work in one line only.

This separation is, to a considerable extent, necessary. Those doing the routine diagnostic and sanitary examinations are usually not of the type to be able to wish to do investigative work. There are others who have the capacity to do research work and these should be given the opportunity to give a part of their time to investigation, while at the same time they direct and oversee a considerable amount of routine work. And the salaries of those doing mostly investigative work should be fully equal to the salaries of those doing chiefly administrative work.

The director and first assistant director of the laboratory should be in touch with all the work and each should take an active part in at least one division of it. The interrelations between the divisions are usually so many and so close that this general acquaintance with the whole work is essential.

If those in charge did nothing but laboratory administrative work, they would soon cease to be capable wisely to direct it and to estimate the value of its output.

According to the size and complexity of the laboratory, the functional divisions may or may not be grouped under assistant directors. If the division is large and important enough it may have a chief over it, but if it is small, or while it is in a transition stage of growth, it may be conveniently placed under the supervision of an assistant director having charge of another division.

All of the assistant directors and the workers filling positions of responsibility should know in a general way about the work of all the divisions, so when changes in the force occur the position vacated can be filled by the one best fitted to take it up, so that no interval in the efficient carrying on of the examinations and investigations may occur.

The minor workers who have ability should also have some knowledge of at least one other line, so as to broaden their knowledge, increase their interest, and make them available to fill places left vacant by resignation, sickness or vacation.

Frequently the results of some investigator's work may lead to practical application in a different functional division of the laboratory from the one he belongs to. It will often be in this case for the greatest efficiency of the laboratory to allow a worker to divide his time between two functional divisions.

The director of the laboratory should be given freedom to arrange those matters as his knowledge of the problems and his force make advisable.

It would certainly be a very narrow point of view to claim that this should not be allowed because superficially considered it interfered with an easy estimate of functional cost accounting. As a matter of fact an estimate of the cost of producing antitoxins or of examining a sample of milk can never be obtained from these general reports.

The higher workers should all be expected to do some research work and some time should be given them to do it. In this way their interest is stimulated and their capacity measured and developed for more important responsibilities.

Many cities and states still hesitate to arrange the budget for the laboratories so as to require a moderate amount of research investigation.

My experience in New York City convinces me that the omission of a provision for research along practical lines is a great mistake. The organization of the research branch of the laboratories was due primarily to Dr. H. M. Biggs. He is carrying out the same policy as commissioner of health of New York state in insisting on and obtaining money for the installation of research laboratory investigations along intensely practical lines in the prevention and cure of communicable diseases.

Those who are familiar with the laboratories, before and since he became commissioner, have no doubt that the slight extra expense incurred for investigation has justified itself in the complete change in the point of view of the laboratory workers and in the increased efficiency of their work.

The great research institutions, like the Pasteur and Rockefeller institutes, have neither the inclination, time nor opportunities to attack many of the public health problems that are pressing on departments of health.

It is needless to state that the only qualification for appointing and keeping laboratory workers should be fitness for the positions.

The civil service commission should endeavor to make the examinations of such a character that men and women of the right qualifications may become available.

A CASE OF GUMMA OF THE SCLERA

EUGENE M. BLAKE, M.D.
AND
JOHN E. LANE, M.D.
NEW HAVEN, CONN.

The etiology of episcleritis and scleritis is frequently uncertain. According to de Schweinitz, the causes are exposure to cold, rheumatism, gout, scrofula, vasomotor changes and disturances of the sexual apparatus, especially anomalies of menstruation. Such a statement is largely a confession of ignorance. More definite is the statement that syphilis and tuberculosis are also causal agents.

Syphilitic scleritis is not very common, and when it does occur it usually takes the form described as episcleritis or that of deep scleritis, and not that of a gumma. In fact, gummas of the sclera are so rare that they are curiosities, and in many standard textbooks of ophthalmology no mention is made of them, and references to them in ophthalmologic literature are few. They are occasionally mentioned in works on syphilis. Terrien[1] says that about thirty cases have been reported, and that they occur from ten months to eight years after the chancre.

The structure of the sclera probably explains the infrequence of the development of gummas in it. The dense fibrous tissue and the few elastic fibers of which it is composed form a strong, hard and inelastic tissue, which is not a favorable ground for the development of the rounded, limited, elevated growth, hard at first and tending to soften and break down in the center, which is typical of the gumma.

Deep scleritis frequently shows some nodules which are too small and too irregular to be classed as gummas. These nodules are frequently mutiple, and the two eyes are frequently affected at the same time. This condition is usually refractory to treatment and is frequently complicated by opacities in the cornea, iris and vitreous, and by other secondary changes in the other coats of the eye. Fuchs states that recurrent scleritis does not ordinarily have a syphilitic origin, but that isolated nodules are sometimes found in the sclera as a result of syphilis. It is very likely that these nodules in rare cases develop into gummas.

REPORT OF CASE

A. N., man, aged 38, Italian, married, was employed in a wire mill. He was seen April 15, 1916. About ten months before, a small red spot had appeared on the sclera of his left eye which he at first thought to be due to a foreign body. He had been treated for several months by two different ophthalmologists, and during this time the spot had constantly increased in size and had become more and more painful.

On the temporal side of the left eye, at a distance of about 3 mm. from the margin of the cornea, was an oval tumor measuring about 4 by 6 mm., with the longer axis up and out. The tumor was raised approximately 3 mm. above the level of the surrounding sclera. It was yellowish red, slightly tender, distinctly hard, and covered by dilated conjunctival vessels. The sclera about the tumor was of a slaty blue.

The clinical diagnosis was either tuberculosis or gumma. There was no history of tuberculosis or of syphilis, though there was a history of venereal exposure. From his description it was thought that he had recently been taking mercury and potassium iodid, probably in insufficient doses to prove a diagnosis. Several tuberculin tests were made, all of which were negative. The Wassermann reaction was strongly positive. As the previous treatment had been ineffective, four injections of neosalvarsan were given at intervals of one week. These were followed by weekly injections of mercurial oil.

Shortly after the first dose of neosalvarsan, the tumor began to decrease in size, and after eight weeks nothing was left except a slaty blue spot and a few dilated conjunctival vessels. The discoloration has gradually become less, and the conjunctival vessels smaller, though there will probably be some permanent enlargement of them. The other tissues of the eye were not affected, and vision was normal after the pain and tumor had disappeared.

55 Trumbull Street.

1. Terrien, F., in Gaucher: La syphilis du système nerveux, de l'œil, de l'oreille et du nez, Paris, 1910.

THE CONTROL OF LOCALIZED HYPERHIDROSIS

ARTHUR WILLIAM STILLIANS, M.D.
Attending Dermatologist, Cook County Hospital; Consulting Dermatologist, Chicago Lying-In Hospital
CHICAGO

Circumscribed hyperhidrosis is a common disorder of the skin which may usually be classed among the petty annoyances of life. Not infrequently, however, especially when complicated by bromidrosis, dyshidrosis or hyperkeratosis, it assumes a much more important rôle, incapacitating the person for work or pleasure. Walking is made so painful as to be impossible, the use of the hands is similarly interrupted, or the knowledge that an unpleasant odor clings to one makes the sensitive person dread to meet others.

Treatment has always been unsatisfactory, as evidenced by the list of remedies recommended, until the discovery that Roentgen rays would control it. The latter treatment, however, is time consuming and expensive, and not without danger in inexperienced hands. An efficient and inexpensive local application is much to be preferred. This we possess, I believe, in aluminum chlorid, $AlCl_3.6\ H_2O$, a white deliques-

cent salt easily soluble in water. Heating changes the crystals to alumina, Al_2O_3, and then to a hard substance resembling colorless corundum. In prescribing aluminum chlorid, the fact that it is incompatible with alkalies, sulphur, phosphorus and selenium should be borne in mind.

A 25 per cent. solution of aluminum chlorid in distilled water dabbed gently on the part every second or third day and allowed to dry on will cause a rapid amelioration of the excessive sweating. It is usually sufficient to make three such applications, then to wait for a recurrence before resuming treatment; or one application a week may be made to ward off recurrences. Dress shields, which aggravate the trouble by their impenetrability, can often be discarded after a few applications.

The drug is not wholly bland, for excessive use of it will cause a sharp itching or stinging sensation which usually subsides spontaneously if the part is not scratched. Excessive or careless use followed by scratching can easily cause a dermatitis, but I have never seen this happen when reasonable care was exercised. To avoid it the patient should be instructed to allow the lotion to dry thoroughly before clothing is permitted to touch the skin, and should be warned against overenthusiasm in its use. If itching does occur in spite of precautions, an ointment of cold cream containing 12 per cent. boric acid may be used, or a calamine lotion with or without 0.5 per cent. phenol (carbolic acid).

In twenty cases in which I have used this lotion it has never failed to give relief. Most of these were cases of simple local hyperhidrosis of the axillae or feet; but three were cases of persistent vesicular eruption of the feet accompanied by excessive sweating. Only the worst of these will be detailed.

Mr. B., an insurance broker, aged 34, was referred to me by Dr. A. B. Späch for treatment of a chronic dermatitis of the hands and feet, present constantly for the last fifteen years, but varying in severity. The feet always grew worse in the summer time, so that at times he could hardly walk because of the pain. All efforts to relieve the condition, powders, lotions, baths and special shoes, had failed.

On examination, small deep vesicles, in size from that of a pinhead to half a split pea, and the bases of ruptured vesicles were found in considerable numbers over both soles. The lesions were partly discrete and partly grouped, and there was very little accompanying erythema. The eruption was especially marked below the instep and about the toes, and the skin between the toes was sodden, white and thickened. A small patch of papular eczema was seen above one ankle. The socks, which had been worn only a few hours, were soaked with perspiration, without any markedly offensive odor. A search for fungus in the epidermal roofs of several of the more recent vesicles was without result. The general health was good except for a slight albuminuria of unknown cause which he had had for many years. The trace of albumin present at the time of my examination was not accompanied by casts.

The patient was given a small quantity of the aluminum chlorid lotion to try cautiously in one of the interdigital spaces. On reporting that this caused no irritation, he was told to apply it over the whole surface of both feet and between the toes once every third day. After a few applications there was great improvement, and in three weeks he was free from signs of the disease. He says that in spite of the unprecedented hot weather this has been his most comfortable summer in the last fifteen years.

In other similar cases there have been good results. Care has always been taken to reduce any active inflammatory eruption before using the aluminum chlorid for fear of irritation from it. A few have reported marked itching for a few minutes after applying the lotion, but this has always subsided spontaneously, and no patient has developed a dermatitis. I know of no other drug which will produce so lasting an astringent effect on the skin with so little danger of irritation. Used with ordinary care, it has done wonders in the limited series of cases in which I have tried it.

77 East Washington Street.

Therapeutics

DISTURBANCES OF THE KIDNEYS

(Continued from page 1941)

CHLORIDS

The daily excretion of sodium chlorid is from 10 to 15 gm., varying closely with the intake of salt. In health only a trace of chlorids is found in the stools, while varying amounts may be excreted by the skin, at least more than 1 gm. During starvation sodium chlorid is not eliminated, but is retained in the body.

The clinical point of interest in the chlorids is their retention by the body and the part this retention plays in edema. This point will be discussed fully later under the heading of edema. In pneumonia, and in some cases of profuse catarrhal exudate, the urinary excretion of chlorids is diminished without retention, owing to its excretion elsewhere.

INDICANURIA

Indicanuria is of frequent occurrence, and indicates that some protein putrefactive process is taking place in the ileum and colon with the production and absorption of indol and the excretion of indoxyl potassium sulphate (indican). Indol and skatol are derived from bacterial putrefaction of tryptophan, an amino acid. They are absorbed from the intestines, becoming oxidized. The indoxyl reaches the liver and combines with sulphuric acid, forming indican, which finally passes off by the urine. On an ordinary diet from 5 to 20 mg. of indican are daily excreted in the urine. On a diet very low in nitrogen there may be practically no indican eliminated.

Indican in the blood is not poisonous, but other products of decomposition and toxalbumins absorbed from the intestines at the same time as the indol may produce symptoms of poisoning. If indol alone does not, skatol and cresol with toxalbumin will frequently produce symptoms of poisoning, such as headache, restlessness, insomnia, gastro-intestinal indigestion, at one time a dry skin, at another time more or less profuse perspiration, sometimes eruption on the skin, and sooner or later kidney irritation, with attacks of polyuria, traces of albumin, cylindroids, and even hyaline casts.

Not every case of putrefaction in the intestines causes indicanuria, nor does constipation per se cause it. It occurs acutely in abdominal disturbances, as typhoid fever, in some types of diarrhea, in intestinal obstipation, and in peritoneal inflammations. Indicanuria is only an indicator of a condition, namely, putrefaction in the lower part of the intestine, and shows that other irritant and poisonous products are being absorbed. If this absorption persists, as shown by persistent indicanuria, these products of protein decomposition irritate the walls of the blood vessels, or stimu-

late the suprarenals to greater activity in producing vasopressor substance; or both conditions prevail, resulting in hypertension. If the liver and kidneys are equal to the strain, no evident symptoms of ill health may result for months or years; but the persisting hypertension and continued irritation with perhaps other factors, finally causes cardiovascular-renal disease.

Other symptoms caused by such fermentative processes in the intestine are: irregular bowel action (constipation or diarrhea); gastric flatulence; coated tongue; dizziness; drowsiness during the day and insomnia or troubled sleep at night; irritability; at times muscular lameness or muscle cramps; cold extremities, often accompanied by increased perspiration due to dilatation or contraction of the local blood vessels caused by irritation; polyuria if there is hypertension, and a slight yellowing of the sclerotics and some parts of the body, as the palms of the hands if there is liver disturbance, the perspiration becoming malodorous and staining the clothing. These symptoms are often termed "biliousness," and fortunately the treatment generally given with that diagnosis is successful, namely, calomel or some other purgative, together with a more rational diet, including the reduction of the amount of meat, alcohol, coffee, etc., consumed.

In addition to intestinal and reflex causes, and intestinal putrefaction caused by improper food or a too large amount of meat proteins, probably other frequent causes of putrefaction are pus, abscesses, etc., in the mouth, throat or nasal sinuses. Bacteria swallowed with the food from pyorrhea alveolaris, and bacteria or toxins absorbed into the blood from infection at the apex of a tooth doubtless play a large part in producing fermentation in the small and large intestine. It should be noted that authorities on medicine have long stated that pyorrhea alveolaris and chronic colon infection or putrefactive processes are of common occurrence after 40 years of age.

As there is usually a small amount of indican in the urine of a normal person, no examination of urine is complete unless it is noted whether or not indican is increased. If it is found that the amount of indican is increased, there may be a disturbance of the lower part of the small intestine and the colon. Animal proteins should be absolutely removed from the diet for a time, and there should be thorough purging. The cause of the disturbance should be sought and removed, if possible. This means particularly careful examination of the teeth, gums, tonsils, nose and adjacent sinuses. If no tangible cause for indigestion can thus be found, it must be considered a functional condition such as has just been said to be of common occurrence after the age of 40. However, we have not yet reached the stage of postponing old age by removing the colon. Neither can we prolong youth or life by injecting lactic, Bulgarian or other bacilli or by taking sour milk or yeast at frequent intervals. Although an attempt to overcome colon fermentation should always be made, the seriousness of this condition should not be exaggerated, as it is a condition well tolerated.

The condition of the patient having been ascertained, the bowels should be caused to move daily and regularly; a more or less rigid meat purin-free diet should be ordered, and colon washings may be given until the urine is practically indican-free. The flora in the intestine may be changed by administering yeast or lactic bacilli; but it should not be expected that such treatment alone can cure a colon putrefaction. These bacilli should not be given over too long a period, as they may predispose toward joint pains and symptoms of a general hyperacidity. Liquid petrolatum is now much used, and often seems beneficial, especially if the patient is subject to constipation. When it is administered over too long a period it frequently causes gastric and intestinal indigestion, perhaps by mechanically interfering with the secretions.

Many persons have intestinal disturbances because they become chilled at night, the blood being driven from the surface of the body to the abdomen. These intestinal disturbances, colon putrefactive processes, and the formation of large amounts of colon gas are often prevented by keeping the body, and particularly the bowels, warm. Phenyl salicylate (salol) in a dose of 0.25 or 0.30 gm., in capsule, three times a day, after meals, for a short period is often of benefit in preventing intestinal fermentation.

The patient may be given one meat protein after another to see which he tolerates without decomposition. He should learn, however, so to regulate his diet and bowels as to prevent colon fermentation. It is well to set aside one day each week on which to abstain from protein food, and to take a saline purge on that day (if such is not contraindicated by the condition). A sour milk week occasionally is of value.

Care must be taken that anemia is not caused by a limited diet. Anemia, however, may develop from persistent putrefaction. The weight should be watched and the skin studied for eruptions, dryness or profuse perspiration, in order to regulate properly food, drink, and possible drugs. Hypothyroidism or hyperthyroidism may be the cause of the intestinal condition.

This discussion, though apparently a long one on a simple condition, is a discussion on preparedness for the proper management of a patient with intestinal indigestion; and indicanuria may mean prevention of kidney, cardiac and vascular disease. It should be noted that epilepsy and some mental disturbances have been cured by removal of bowel defects. Intestinal stasis can also aid bacterial invasion, particularly colon bacilli disturbances, and many other more or less serious ailments. As first stated, a tangible cause for putrefaction and indicanuria must be sought through any or all of the gastro-intestinal examinations now so well understood, from gastric and fecal analyses to bismuth pictures. Chronic appendicitis, chronic gallbladder trouble, and anything that damages or irritates an intestine may cause intestinal disturbance and absorption of toxalbumins and the substances already mentioned. Passive congestion of the liver and intestines from an insufficient heart is a prominent cause of disturbances resulting in indicanuria.

It has been stated that whenever there is nitrogen retention in the blood there is indicanuria.[53]

INDOLACETIC ACID

This substance, probably a derivative of tryptophan, has been found in urine, and Ross[54] thinks that it must be due either to a constitutional disorder of metabolism or to a particular kind of intestinal putrefaction.

(To be continued)

53. Tschertkoff, J.: Deutsch. med. Wchnschr., 1914, xl, No. 36.
54. Ross, E. L.: A Preliminary Note on the Excretion of Indolacetic Acid in the Urine, Arch. Int. Med., July, 1913, p. 112.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, DECEMBER 30, 1916

A MORE RAPID DIAGNOSIS OF RENAL TUBERCULOSIS

In many instances the diagnosis of tuberculosis of the kidney necessitates the search for the tubercle bacillus in the urine secreted by the organ supposedly involved. If the urine is obtained by ureteral or urethral catheterization, a direct microscopic examination, especially after the collection of a urinary sediment by high speed centrifugation, may suffice to give an answer. A danger of error often lurks in the possible presence of the smegma bacillus, from which the micro-organism responsible for tuberculosis can be differentiated directly only with great difficulty, if at all with safety for the conclusions arrived at, by staining methods.[1] Resort to animal inoculations remains as the safe procedure for a conclusive diagnosis. The value of animal inoculation in the diagnosis of tuberculosis is not a new discovery. It has been recognized for half a century.[2] Klebs employed the guinea-pig test as early as 1868, though it is said that Damsche[3] was the first investigator to use this animal for the diagnosis of renal tuberculosis.

In the animal test experiment, definite tuberculous lesions usually do not develop before from four to six weeks have elapsed after the inoculation of suspected urinary sediment. Suggestions have accordingly been offered with the purpose of making an earlier diagnosis by this method. Bloch and others have maintained that if certain of the lymph glands are bruised or injured, definite tuberculous changes may be noted in nine or ten days after an inoculation for diagnostic purposes.

Murphy and Ellis[4] have reported that white mice which have been exposed to Roentgen rays are made markedly more susceptible to bovine tuberculosis than are normal animals. They explain this fact by the destruction of the lymphoid tissue which, they say, constitutes an important agent in the defensive mechanism against tuberculosis. In practical accord with this, Morton[5] of the Massachusetts General Hospital has found that it is possible to reduce the resistance of guinea-pigs to tuberculosis by Roentgen-ray exposures, so that when animal inoculation is required for a diagnosis a much quicker result may be had than by the use of normal animals. In renal tuberculosis when it is necessary to resort to the use of animals — a procedure requiring ordinarily five or more weeks — by the use of Roentgen-rayed guinea-pigs the diagnosis can be made in from eight to ten days. The resistance can be sufficiently lowered by one massive dose of the Roentgen ray administered either shortly before or after the inoculation of the material to be tested. The lesions are so marked in these animals that the diagnosis is certain after the interval indicated above.

The new diagnostic technic of Morton on the guinea-pig is available for the human strain of tubercle organism. Whether or not the lowered resistance of the animals can here be attributed to destruction of the lymphoid elements has not been decided. The inability at present to explain the mechanism of the increased susceptibility need not detract, however, from the promise, held out by Morton's work, of the practical value of the plan proposed by him.

1. The Smegma Bacillus, editorial, The Journal A. M. A., Jan. 23, 1915, p. 348.
2. Marcet, W.: Tr. Med. Clin. 1867, 437. Klebs, E.: Virchows Arch. f. path. Anat., 1868, xliv, 242, 296.
3. Damsche: Deutsch. Arch. f. klin. Med., 1882, xxxi, 78.
4. Murphy, J. B., and Ellis, A. W. M.: Jour. Exper. Med., 1914, xx, 397.

CREATIN AND CREATININ IN MAN

Normal muscle tissue of all vertebrates always contains the substance creatin as its chief nonprotein nitrogenous compound; the closely related derivative creatinin is always present in the urine, in which it represents the nitrogenous constituent second in abundance only to urea. These facts speak plainly for the significance of creatin and its anhydrid creatinin in the chemistry of the living organism. Whether, however, the muscle creatin and urinary creatinin actually have a direct relationship to each other in the body has not been so easy to determine.

The studies of Folin led to the demonstration of a now well recognized remarkable constancy in the output of creatinin in the urine from day to day on a meat-free, that is, creatin-creatinin-free diet. This is a rather definite indication of some constant and regular formation of creatinin through endogenous sources, since the quantity of the output is not essentially altered by the plane of protein intake. Corresponding with this, Myers and Fine in particular have demonstrated that the content of muscle creatin appears to be quite distinctive for a given species, though varying in different animals from 0.3 to 0.5 per cent. This constancy in the content of muscle creatin promptly suggested itself as the underlying factor in the constant elimination of creatinin. Furthermore, the creatinin elimination appears to bear a distinct

5. Morton, J. J.: A Rapid Method for the Diagnosis of Renal Tuberculosis by the Use of the X-Rayed Guinea-Pig, Jour. Exper. Med., 1916, xxiv, 419.

relation to the percentage content of muscle creatin in a given species. The creatinin coefficient of the rabbit, for example, averages fully a third more than that of the dog or man; and similar relations obtain in respect to muscle creatin.

Another feature regarding these two closely related substances points in the same direction. In starvation, and in diseases attended with more or less inanition, creatin appears in the urine along with creatinin. The latter is then ordinarily somewhat decreased in amount. Myers and Fine have ascertained in some cases that the decline in the urinary creatinin is often proportional to the loss of creatin which also occurs in muscle during starvation. These facts help to substantiate still further the view that the creatin and creatinin of the urine have a common origin, namely, in the muscle tissue.

Recently Denis[1] has enriched the literature of this important subject with data obtained at the Massachusetts General Hospital on the creatin content of the muscle tissue of man. The creatin content of the human psoas muscle of normal adults is reported to range about 0.4 gm. per hundred gm. of tissue. The muscle of children is known to contain much less. In persons dying of various chronic diseases, it was noted that in some cases the creatin content was reduced both absolutely and relatively. In most of these cases the patient had been in a cachectic condition for some weeks or months before death, and was greatly emaciated. In others the creatin values were not reduced. In persons dying of acute diseases, it was found that in many instances the muscle gave normal creatin figures; in others, more particularly those dying of septicemias, there was a marked reduction.

Denis points out that these results would seem to lend confirmatory evidence to the theory concerning the interrelationship of "muscle creatin" and urinary creatinin in man, as previous investigators have contended. Shaffer has called attention to the fact that persons who have been ill for many months and are in a feeble and wasted condition have very low creatinin coefficients. As these patients become convalescent and their "muscle tonus" increases, the creatinin coefficient rises. Although Denis made no examinations of the urine, she regards it as safe to assume that all of the feeble and emaciated patients whose muscle was found to possess such a low content in creatin had also an extremely low creatinin coefficient.

The creatin-creatinin problems are thus at length beginning to clear up as added facts are brought to bear on them. Rose and Dimmitt[2] have lately found in experiments on man at the University of Texas that the ingestion of large doses (20 gm.) of creatin in man leads to a very perceptible increase (from 0.3 to 0.49 gm.) in the output of creatinin. This increase in urinary creatinin is attributed to a conversion of creatin into its anhydrid, and not to an increase in the output of endogenous creatinin. The ingestion of large doses (16 gm.) of creatinin is not followed by the appearance of creatin in the urine. This indicates that the reaction creatin → creatinin + water is probably not a reversible one in the human organism. No evidence was obtained indicating a transformation of creatin or creatinin into urea by the body cells. On the contrary, urea is probably not a catabolic product of these substances.

1. Denis, W.: Creatine in Human Muscle, Jour. Biol. Chem., 1916, xxvi, 379.
2. Rose, W. C., and Dimmitt, F. W.: Experimental Studies on Creatine and Creatinine, VII, The Fate of Creatine and Creatinine when Administered to Man, Jour. Biol. Chem., 1916, xxvi, 345.

THE INSECTICIDE ACT AND THE FOOD AND DRUGS ACT

The national Insecticide Act of 1910 was not passed until after the national Food and Drugs Act had been in operation for several years. Profiting to some extent by the defects of the latter law, which, because of its very limited formula-disclosure features, had failed to protect the public adequately, Congress inserted provisions in the Insecticide Act which require, among other things, that the names and proportions of the inert ingredients of an insecticide or fungicide, if there are any, be given on the label. While these provisions are less protective than a complete formula-disclosure enactment would be, still, as an enforceable proposition, the Insecticide Act in this respect is superior to the Food and Drugs Act.

A number of opinions of general interest regarding questions arising under the Insecticide Act and notices of judgments that have been obtained under the act have been issued recently by the Department of Agriculture. In the effort to form a judgment as to the probable value of some of the insecticides which were composed of several constituents, the government has carried out tests to determine the insecticidal or germicidal value of each of the several ingredients, using authenticated material for the tests. In many cases it was found that each one of the ingredients of an insecticide was inert if tested separately.

The findings of the Insecticide and Fungicide Board of the U. S. Department of Agriculture show that many of the popularly supposed insecticides are of no value against certain insects. For example, sodium fluorid, a powerfully toxic agent if taken internally, is found ineffective against the bedbug, probably because that insect cannot be induced to eat it. On the other hand, it destroys the roach because this insect will eat foods containing it.

There is a fundamental difference between the methods of enforcing or interpreting the Insecticide Act and the Food and Drugs Act, respectively. Under the Insecticide Act the burden of proof concerning the efficiency of a product lies with the manufacturer; that is, if a preparation is claimed by the manufacturer to be a roach destroyer, the government holds that

such product must actually destroy roaches, and it is necessary that the manufacturer offer proof to that effect if prosecuted. On the other hand, in prosecutions under the Food and Drugs Act, it devolves on the government not merely to disprove the manufacturer's claims for the alleged therapeutic value of his product but also to prove that the manufacturer had guilty knowledge of its worthlessness. A manufacturer, for example, sells a product under claims which any reasonably informed physician knows are grossly exaggerated or even outrageously false. Under the cloak of "disagreement in medical opinion," the manufacturer sets up the defense (and successfully maintains it, if he has sufficient money to hire a certain class of physicians to testify for him) that the ingredients of his product have been used with success in times past for some of the afflictions which the preparation is claimed to cure. Even after the government has introduced overwhelming evidence on the worthlessness of the preparation, it still has to prove that the manufacturer *intended* to defraud before a conviction can be obtained. As a consequence, the manufacturers of some of the most flagrantly worthless medicinal preparations on the market have escaped conviction or even prosecution.

A comparison of the Food and Drugs Act and the Insecticide Act further illustrates the neglectful attitude of the government toward matters relating to public health. The insecticide law has to do primarily with the protection of property, such as sheep and cattle; the Food and Drugs Act with the most valuable asset of the nation, its health. The citizen may not be defrauded by the sale of a worthless louse killer, but his government offers him little protection against the sale of a worse-than-worthless consumption "cure."

STREPTOCOCCI AND DISEASE OF THE GALLBLADDER

It can no longer seriously be doubted that certain pathogenic bacteria exhibit a special affinity for some particular tissue or tissues. Different tissues or organs seem to afford fundamentally different conditions for the development of micro-organisms of related origin. The recognition of this principle has aided in the understanding of certain infections of hitherto vague character. Stated briefly, streptococci isolated from active lesions in different human organs and tissues, in many instances, have a pronounced affinity for the corresponding organs and tissues of experimental animals. Furthermore, the streptococci isolated from the tonsils and pyorrheal pockets in persons with active streptococcal infection in the interior of the body may have the same sort of affinities as the bacteria from the internal lesion. Obviously, the supply of such streptococci fit for invasion of any part of the body should be reduced, whatever their temporary location in the body may be.

Rosenow[1] has recently furnished further evidence of the elective affinity of streptococci found associated with the gallbladder and neighboring parts in cholecystitis. Having noted earlier that, after intravenous injection of laboratory strains of streptococci, lesion of the gallbladder occurred only when the virulence of the strains had reached a certain point, Rosenow now establishes an elective affinity for the gallbladder of strains from the walls of the gallbladder, the centers of gallstones and even from adjacent lymph glands. The number of experiments and the variety of conditions and the different localities in which the demonstration has been afforded seem to establish still further the general principle of elective properties of bacteria for which Rosenow and others have contended.

Streptococci and colon bacilli from acute cholecystitis gave rise to more marked lesions in the gallbladders of experimental animals than did those from chronic cholecystitis. The power to infect the gallbladder electively may be lost by prolonged artificial cultivation or by passages through animals. A single strain of the micro-organism may have affinity for more than one structure. This is indicated, for example, by the simultaneous occurrence of lesions in the gallbladder and in the cystic and common ducts following intravenous injection of streptococci from a human gallbladder. The occurrence at the same time of cholecystitis and pancreatitis is taken to suggest that the simultaneous presence of the diseases in the same patient is commonly due in the beginning to hematogenous infections, and not so often to lymphogenous or local invasion, as the findings at operation often appear to indicate.

The nature of the primary bacterial invasion of the biliary tract in cholecystitis has often been debated. The discovery of the typhoid organism or the colon bacillus in the affected part does not necessarily imply that either is the essential factor in the etiology of the localized lesions of the gallbladder. Undue attention has doubtless been centered in the past on the portals of entry for bacteria from the alimentary tract, and hence the prominence given to the species of micro-organisms just referred to. There can no longer be doubt as to the possibilities of systemic infection as the result of a general bacteremia. The demonstration, Rosenow[1] writes, of streptococci in the involved tissues in a high percentage of cases of chronic cholecystitis, the elective affinity of these organisms for the gallbladder in animals, and the production of the disease with strains isolated from experimental lesions indicate that streptococci are a cause of cholecystitis. The results of differential cultures in both spontaneous and experimental forms of this disease show that the colon bacillus is commonly a secondary invader in an

1. Rosenow, E. C.: The Etiology of Cholecystitis and Gall Stones and Their Production by the Intravenous Injection of Bacteria, Jour. Infect. Dis., 1916, xix, 527.

infection with streptococci or in a mechanical injury produced by previously formed gallstones. In some instances, however, the colon bacillus is undoubtedly the primary cause of cholecystitis.

If, as there is now reason to believe, the gallbladder may be the host of living streptococci during quiescent intervals between attacks of cholecystitis, the newly acquired knowledge has a prominent bearing on the treatment of disease of the gallbladder. The replies to a questionnaire recently addressed to prominent surgeons by Donald Guthrie[2] indicate that cholecystectomy is employed much more frequently than in the past and is a better operation, though it is attended by many more operative difficulties and dangers than simple drainage. The gallbladder should unquestionably be removed, if possible, when its wall is diseased. Rosenow's studies are believed to emphasize still further the importance not only of draining but also of removing gallbladders, especially in the absence of stones in chronic cholecystitis, so that a latent infection cannot flare into activity when the defensive mechanism of the individual is low. Cholecystitis in the absence of gallstones must frequently be the result of hematogenous infection rather than the result of invasion from the bile; for streptococci which produced marked cholecystitis by systemic intravenous injection failed to do this when injected into the radicles of the portal vein or introduced directly into the gallbladder.

With respect to the formation of gallstones, the results of injections of streptococci are also significant. The rôle which infection plays is indicated by the common presence of bacteria in the centers of gallstones, the formation of gallstones in association with the cholecystitis following injections of streptococci, and the presence of the latter in newly formed stones. But the micro-organisms alone are not the sole causative factor. In addition to the nucleus which they must furnish for the formation of a concrement, a concentrated bile of high cholesterol content likewise seems usually to have a facilitating influence.

2. Guthrie, Donald: Indications for Cholecystectomy, THE JOURNAL A. M. A., Aug. 26, 1915, p. 653.

Quinin in Madras Presidency.—According to U. S. Consul Lucien Memminger, Madras, India, the Indian government report shows that during the year 1915-1916 the output of quinin was 32,688 pounds in Madras Presidency, as against 29,422 pounds for the year 1914-1915. This quinin is manufactured in government factories, which maintain a monopoly of the drug. The advance in the cost of bark raised the price of manufactured quinin from $2.60 to $3 per pound. Medical depots pay $5.50 a pound, but government institutions, native states, local fund hospitals and municipal dispensaries pay from $4.25 to $5 a pound according to the quantity. Formerly much of the drug was imported, chiefly from Java, but as a result of the acclimatization of the cinchona plant in India imports on behalf of the government have been discontinued. On the three government cinchona plantations in southern India 1,149 acres are under cultivation, and in the year named supplied 352,165 pounds of bark, while 318,958 pounds were purchased from private growers.

Current Comment

THE COMPLETION OF THE INDEX CATALOGUE OF THE SURGEON GENERAL'S LIBRARY

With Volume XXI, just published, the second series of the "Index Catalogue of the Library of the Surgeon General's Office" ends. This volume contains a valuable list of all the abbreviations of titles of medical periodicals employed in the second series, covering 233 pages. The most interesting single items are the subjects Work and Workmen, Wounded and Wounds, the latter covering eighty pages, being of paramount importance just now. In his letter of transmission to the surgeon general, the librarian, Col. C. C. McCulloch, Jr., gives an interesting account of the growth of the library, from a modest departmental outfit of medical books, gathered for the use of Surgeon General Lovell (1818), amounting to only 228 volumes in 1840, up to the present collection, containing 224,522 volumes, 337,120 pamphlets (in all 561,642 items), and 5,249 portraits. May 10, 1864, a tiny interleaved catalogue in duodecimo was prepared for Surgeon General Barnes, and from this modest acorn grew the idea of the present vast catalogue of all the medical literature in the world, comprising, in its first and second series, thirty-seven large quarto volumes. The splendid work of Billings and Fletcher in building up the library and in devising this monumental key to its resources is reviewed by Colonel McCulloch; and the methods employed to increase the collection by bargain purchases in open market, judicious exchange of duplicates and liberal donations from the profession are mentioned. The gifts of the principal donors, the late Thomas Windsor of Manchester, England, the late Sir Lauder Brunton, Sir William Osler and others are described in detail. The librarian also gives loyal credit and recognition to the different men on the library staff who have assisted in the achievement of the historic catalogue. The Surgeon General's Library is now second only to the great medical library of the Paris faculty in size and number of volumes, having long since outstripped the collection at Petrograd, which stood second for many years running. For practical use and accessibility to the medical public, the Surgeon General's Library probably excels them all, and is extremely liberal in the lending of books and in supplying information to the profession. Colonel McCulloch and his assistants — especially Dr. Fielding H. Garrison — are to be congratulated on the completion of this great catalogue.

THE ETHICS OF SCIENTIFIC CONTROVERSY

Some weeks ago THE JOURNAL[1] commented on the controversy between Sir Almroth Wright and Sir Watson Cheyne on the treatment of infected war wounds. One part of the literary product of this clash deserves to be rescued from its original environment and preserved as a notable contribution to the general question of the ethics of polemic controversy. This is Sir Almroth Wright's introduction to his vigorous

1. The Treatment of War Wounds, editorial, THE JOURNAL A. M. A., Oct. 28, 1916, p. 1304.

reply to Sir Watson Cheyne.[2] Because of the general interest of the topic, and because of the masterly style with which Sir Almroth has set out his views on this question, we reproduce elsewhere the major portion of this part of the article.[3] The style of Sir Almroth's technical writings has been subjected to some criticism. It has, not unjustly, been described as too compendious. It demands a concentration of attention closer than the majority of readers are willing to give. This accusation cannot be leveled against his literary style, as shown in this example. Whether one agrees or disagrees, wholly or partially, with his views, one cannot rise from reading Sir Almroth's contribution with ambiguity in one's mind as to what those views are. From the detached point of view of the ordinary reader, there is infinitely more fun, and therefore more interest, in a controversy conducted along the lines favored by Wright than one carried on in the compromising ceremonious manner generally supposed to be the correct thing in dealing with professional subjects. The love of battle which is manifested by Sir Almroth is perhaps not wholly unconnected with his Hibernian blood, while the discretion exhibited by Sir Watson Cheyne[4] may be attributable to Caledonian canniness. It is perhaps unnecessary to state that Sir Almroth does not advocate attacks on the private life of one's adversary. His view appears to be that serious controversy is real and not sham fight, and that it should be conducted on the lines of a duel between gentlemen. Sir Almroth's opinions are not printed as those of THE JOURNAL, but we feel that our readers will be interested in his presentation of the ethics of scientific discussion.

MEDICAL SERVICES IN SOCIAL INSURANCE

One of the perplexing details in the formulation of any plans for social insurance is the problem of medical services and remuneration therefor. This question has caused much difficulty and misunderstanding in those countries in which social insurance has been adopted. The American Association for Labor Legislation, in drafting its first bill, wisely left blank the sections dealing with medical services and asked the assistance of medical men in working out a plan that would be at once practicable and acceptable to physicians. The latest revision of their model bill contains for the first time definite provisions for medical service, a summary of which appears elsewhere.[5] The medical provisions have been submitted to and approved by the Council of the Medical Society of the State of New York. They are presented for discussion and criticism. Doubtless many objections or improvements may be suggested which have not as yet been anticipated. Probably no one plan can be devised which will be applicable to every state. It is urged that every physician interested in this subject — and every intelligent physician should be interested — secure a copy of the pamphlet and give careful attention to the provisions for medical services. The time for physicians to study social insurance is now, while the question is in a formative stage.

2. Wright, A. E.: As To How Septic War Wounds Should Be Treated, Lancet, London, Sept. 16, 1916, p. 503.

3. This Ethics of Scientific Controversy, this issue, p. 2043.

4. "You will hardly expect me to reply to Sir Almroth Wright's attack on me either by defending my own or dissecting his mentality. It is a great pity that he has made this such a personal matter; so long as it remained impersonal any criticisms of methods or views, however trenchant, could have been answered, and possibly in course of time the two lines of thought would have more nearly approximated one another."—Lancet, London, Sept. 23, 1916.

5. Medical Service in Health Insurance, this issue, p. 2032.

THE OLD RELIABLE WORKS

On Thursday, December 21, the following colloquy took place in the Senate:

MENTAL HYGIENE AND RURAL SANITATION DIVISIONS

MR. UNDERWOOD:—Mr. President, I ask unanimous consent for the present consideration of the bill (S. 225) to provide divisions of mental hygiene and rural sanitation in the United States Public Health Service, which was reported by the senator from Louisiana (Mr. Ransdell) from the Committee on Public Health and National Quarantine. That senator is now detained from the Senate on account of sickness.

MR. WORKS:—Does the senator move to take up the bill?

MR. UNDERWOOD:—No; I can not move to take it up at this time.

MR. WORKS:—I object to the consideration of the bill at this time. I expect to have something to say about it when it comes up, but I am not prepared to have it taken up now.

MR. UNDERWOOD:—I understood the senator desired to make a statement in reference to the bill, but I did not understand that he desired to prevent its consideration.

MR. WORKS:—I expect to discuss the bill when it comes up, and I object to its present consideration.

Senator Works of California can always be depended on to perpetrate his usual humorous remarks against any legislation in favor of preventive medicine or public health.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

COLORADO

Sectarian Appointments on Medical Board.—Rodney Wren, Trinidad, and D. L. Clark, Denver, osteopathic practitioners, have been appointed, by the governor, members of the state medical board, under the provisions of the bill passed by the legislature two years ago.

Personal.—Dr. Emerson E. Evans, Fort Morgan, has been elected coroner of Morgan County.——Dr. William A. Packard, Fort Morgan, has disposed of his practice and announces his retirement.——Dr. Charles H. Graves, Canon City, was thrown from his horse, December 7, sustaining painful injuries to the shoulder.——Dr. Lloyd R. Allen has been elected county physician of El Paso County.

DISTRICT OF COLUMBIA

Government Insane Hospital Becomes St. Elizabeth's Hospital.—The United States Government Hospital for the Insane, Washington, has been officially renamed by Congress, by the sundry civil appropriation act of July 1, 1916, and is now St. Elizabeth's Hospital.

Tuberculous Schoolchildren.—Discussing the regulations recently promulgated by the commissioners of the District requiring the exclusion of tuberculous children from school, Dr. William C. Woodward, health officer of the District, told the Monday Evening Club, at its meeting, December 18, that exclusion notices had been issued against seventy-four pupils. After the issue of such notices, diagnoses were changed or certificates of recovery filed by the attending physicians, in eighteen cases. The pupils excluded had in every case been registered by private physicians in the first instance as suffer-

ing from pulmonary or some other communicable form of tuberculosis, and cases of 131 other children so registered are still under investigation. Commenting on the tardiness with which tuberculosis is reported, Dr. Woodward pointed out that out of 682 cases registered in 1915, seventy-one were not registered until after death, and of those registered antemortem, ninety-six were registered within one week of the fatal termination, and ninety-eight prior to one week but less than one month before death.

ILLINOIS

Personal.—At the annual meeting of the Hinsdale Sanatorium Association, December 9, Dr. Mary W. Paulson was elected superintendent of the institution.——Dr. Robert J. Christie, Quincy, has been appointed a member of the board of directors of the Adams County Antituberculosis Hospital.

Indictments in Medical Fraud.—Ten indictments were returned by the Cook County, Illinois, grand jury, December 22, following an investigation of a syndicate of supposed swindlers who, last July, it is stated, attempted to obtain for students "other practitioners'" licenses from the Illinois State Board of Health. Fred D. Farr, a medical student and an alleged go-between, turned state's evidence, and the results of an investigation of the license mill were given by Dr. C. St. Clair Drake, secretary of the state board of health. The indictments returned as reported were against two physicians, Dr. Fred B. Fellows and Dr. Frank C. Achatz; against John Sharp, the Rev. I. O. Bennett, J. B. White, and Mrs. Artilla Judd, respectively, president, principal, instructor and student of the Davenport College of Chiropractice; against Philip Gregg and Silas Wesley, medical students, and against Charles Williams, a salesman of chiropractic supplies, and R. D. Moore, who posed as the "man higher up." Dr. Fellows is said to have been the "brains" of the gang.

Chicago

Lying-In Hospital Report.—At the annual meeting of the Staff of the Chicago Lying-In Hospital, December 13, it was reported that 29,980 patients had been treated at the hospital, and that the receipts for the fiscal year were $67,101.82, and the disbursements $65,910.90.

Honor President Judson.—Three hundred members of the faculty of the University of Chicago gave a dinner, December 20, in honor of President Harry Pratt Judson, in celebration of his achievements in formulating plans for the new medical school. On behalf of the faculty, Prof. Robert R. Bensley presented Dr. Judson with an illuminated memorial address.

Personal.—Major Fred H. Blayney, chief surgeon of the Second Infantry, Illinois National Guard, has been appointed, by President Loeb of the board of education, a member of the committee to work with members of the board on the question of military training in the public schools of the city.——Dr. Arnold C. Klebs is spending the Christmas holidays in Chicago.

INDIANA

Personal.—Dr. James W. McKinney, Bluffton, who was operated on for the removal of gallstones at Augustana Hospital, Chicago, December 11, is making good progress toward recovery.

Executive Secretary Appointed.—The Indiana State Medical Association has employed Mr. Frederick E. Schortemeier as executive secretary. Mr. Schortemeier is an attorney, a graduate of Butler College and of Harvard Law School. An office has been opened in the Hume-Mansur Building, Indianapolis. It is planned to develop the office to be of service to the members of the state association individually as well as to the organization. A reading room is to be opened and members are invited to avail themselves of the advantages this office affords.

IOWA

Psychopathic Hospital Needed.—At a conference of the chief executives of the Iowa institutions under the board of control, at Des Moines, December 5, Dr. Albert M. Barrett, director of the State Psychopathic Hospital of the University of Michigan, Ann Arbor, read a paper in which he urged the establishment of a psychopathic hospital at the state university, Iowa City. A movement to ask the legislature to make appropriations for a hospital to treat mental diseases is well under way.

Typhus.—On account of the persistence of typhus fever brought into the state by Mexican railroad laborers, the state health authorities have ordered railroads to destroy all vermin in construction camps and bunk cars, and to isolate all Mexicans for a period of three weeks before bringing them into the state for employment on construction work. In a long circular of instructions to the railroads, the state health department calls attention to the fact that lice transmit typhus fever, and emphasizes the importance of examining all cars, houses or camps used by railroad employees and owned by the railroad company or others, the examination of employees, particularly Mexicans, and the disinfection of their bodies and clothing. Railroads are required to provide cars equipped with apparatus for sterilizing by heat all mattresses, bedding and clothing, and in which antiseptic baths may be given for the killing of lice on persons found after careful examination to be infested. All houses and cars used as dwellings for employees must be thoroughly fumigated with sulphur. The roads are requested to look after these matters in other states as well as in Iowa.

KANSAS

Typhus in Topeka.—A case of typhus fever has appeared in Topeka. The patient is a Mexican, employed by the Santa Fé system as a laborer. The diagnosis was made by Dr. John P. Kaster of the Santa Fé Hospital service, and proper measures against infection were taken immediately by the railroad officials.

Sanatorium Needs.—An appropriation of $300,000 for the State Tuberculosis Sanatorium, Norton, will be asked from the legislature, by the superintendent, Dr. Chauncey S. Kenney. With this appropriation it is proposed to build, equip and operate for two years a sanatorium of six buildings with accommodation for about 160 patients. At present the only state sanatorium in Kansas has a capacity of thirty-five patients, or two fifths of 1 per cent. of the individuals afflicted with tuberculosis.——The preliminary opening exercises of the Sedgwick County Tuberculosis Sanatorium, located south of Wichita, were held, December 6, when Dr. Chauncey S. Kinney, superintendent of the state sanatorium, made a talk on the subject of "Tuberculosis" before the Wichita Charities and Correction Association. The date of formal opening of the sanatorium has not yet been decided.

MARYLAND

Symposium on Labrador.—A symposium on Labrador and Newfoundland was given, December 21, at the Medical and Chirurgical Faculty building by Dr. John Grieve, chief of staff of Battle Harbor Hospital, one of the Grenfell mission institutions of Labrador, and by John M. T. Finney, Jr., Baltimore; Charles Parsons, Colorado Springs; John R. Paul, Philadelphia, and E. M. Hanrahan, Binghamton, N. Y., four second-year Johns Hopkins Medical School students who spent last summer at the hospital. The meeting was held under the auspices of the local Grenfell association in an effort to inspire Baltimore to give more freely to the medical missionary work of Dr. Wilfred Grenfell.

Hospital Exchange to Be Established.—Dr. Arthur P. Herring, secretary of the State Lunacy Commission, has called together a committee which will organize a permanent hospital exchange where the work of mentally and physically handicapped persons in Maryland will be placed on exhibit and sale. This exchange is especially to relieve the hospitals for the insane of the accumulated material, and will also enable the hospitals for crippled children and the institutions for the blind to dispose of the handiwork of the patients. This exchange is believed to be the first of its kind to be established in this country and will have quarters in Levering Hall, as a part of the Charity Alliance's plan to centralize all charity organizations in the city.

Personal.—Dr. Karl H. Van Norman, formerly first assistant superintendent at the Johns Hopkins Hospital, has been promoted in the British Hospital Corps and is now assistant to the chief of the Canadian hospitals in England. The unit embraces nearly a score of hospitals caring for wounded Canadians, with headquarters in London.——Dr. G. Milton Linthicum has returned from Eagle Pass, Texas, where he served as surgeon with the Fourth Maryland Regiment, and has resumed practice in Baltimore.——Dr. Stacy T. Noland has resigned as assistant physician at the Eastern Shore State Hospital, at Cambridge, to accept an appointment at the Montana State Hospital, Dr. John M. Scanland, superintendent.——Dr. John D. Blake, health commissioner, is recovering from his recent illness and will leave shortly for his farm in Virginia for a long rest.——Dr. James H. Jarrett is ill with heart disease at his home at Towson.

MASSACHUSETTS

Lectures at Forsythe Dispensary.—A free course of Sunday afternoon lectures at the Forsythe Dental Infirmary, in Fenway, Boston, was opened, December 10, by Dr. Richard Grady, chief dental surgeon at the United States Naval Academy, Annapolis, Md., who traced in his address the origin and progress of dental hygiene.

The Framingham Experiment.—The methods by which an effort will be made during the next three years to control tuberculosis in the town of Framingham have been outlined by those who will have charge of the work. Framingham was selected for this experiment by the Metropolitan Life Insurance Company, which contributed $100,000, and the health and disease control committees of the National Tuberculosis Association. The plan of campaign is to locate all cases of tuberculosis at the earliest possible date; to have regular examinations of all people of the town; to prevent new infection, especially among babies and schoolchildren, and to conduct an educational campaign in schools, factories and homes. The experiment is in charge of Dr. Donald B. Armstrong.

MICHIGAN

Follow-Up Work in Tuberculosis.—The state board of health has arranged to send to counties where tuberculosis surveys were conducted at the outset of its campaign for the control of tuberculosis, representatives to check up the results of the survey and the measures of prevention and treatment following. It is the object to acquire definite figures as to the progress of the campaign and further to emphasize preventive measures.

Sanatoriums for Nineteen Counties.—A little more than a year ago the state board of health began its tuberculosis survey field work, and as a result, St. Clair County has recently voted to spend $15,000 on a sanatorium; Alpena County has decided to build a sanatorium in the spring; Menominee County has decided to convert the county poor farm into a county sanatorium, and plans for county sanatoriums have been started in Chippewa, Delta, Dickinson, Gogebic, Huron, Iron, Kalkaska, Missaukee, Osceola, Sanilac, Tuscola, Wexford, Luce, Mackinac, Clinton, Ionia, Gratiot, Mountcalm and Grand Traverse counties. A number of these counties will unite in the establishment of joint sanatoriums.

Personal.—Dr. John Vork, Grand Rapids, was found injured and partially unconscious in his automobile, December 9.——Dr. John D. McEachran, Vermontville, fractured his wrist, December 9, while cranking his automobile.——Dr. William N. Braley, Highland Park, is said to be seriously ill with diphtheria.——Dr. John L. Porter, Chicago, conducted an orthopedic clinic at the Blodget Memorial Hospital, Grand Rapids, December 6.——Dr. Rufus J. Hyde, Eaton Rapids, who has been under treatment at the University Hospital, Ann Arbor, is reported to be convalescent.——Dr. Paul Poisson, Tecumseh, who had been serving with the Canadian Army Medical Corps in France for two years, has returned home on leave of absence.——Dr. George L. LeFevre, Muskegon, suffered a fracture of several ribs when his automobile skidded into a ditch recently.

NEW YORK

Examination Rooms in Schoolbuildings.—Following the recommendation of the health commissioner, Buffalo is to have a new schoolbuilding which will contain a room for the examination of children, a dental dispensary and at least one open air classroom. Provision for such rooms in all new schoolbuildings in the city has been sanctioned by resolution of the city council.

Hospital Saving.—Since the adoption of the ordinance in March, 1916, replacing the ten city physicians who worked part time by four who devote full time to the work, $10,366 has been saved in six months by the city of Buffalo in hospital expenditures for indigent patients, as compared with the same period of 1915. It is said the decreased expense is due not so much to the fewer number of patients handled, but rather to their shorter stay in the hospital under the newer and more efficient system. It is believed that the expenditure for the year 1916 will be $20,000 less.

New York City

Personal.—Dr. Henry A. Bernstein has been appointed obstetrician and associate gynecologist to Beth David Hospital.——Dr. John D. Richards, Manhattan, fractured his leg while practicing polo in Van Cortland Park, December 10. He is under treatment at St. Vincent's Hospital.

The McCorkle Fund.—The late Dr. John A. McCorkle, Brooklyn, has set aside in trust bonds of the market value of $50,000 to become payable to the Long Island College Hospital on his death.——A committee of citizens is endeavoring to raise a like amount as a memorial fund to Dr. McCorkle. These funds are to be used as an endowment for the institution.

Herter Foundation Lectures.—Under the Herter Foundation the faculty of the University and Bellevue Hospital Medical College announces five lectures by Prof. Archibald B. Macallum of the University of Toronto on "The Distribution of Inorganic Compounds in Animal and Vegetable Tissues and the Forces that Determine it." These lectures will begin January 8, at 4 o'clock, at the Carnegie Laboratory, 328 E. Twenty-Sixth Street, and will be continued daily at the same hour.

New Tuberculosis Hospital.—Miss Martha Hentschel, herself a sufferer from tuberculosis, has deeded her estate at Kingston, N. Y., of 3½ arces, with large buildings, valued at $30,000, to Miss Lillian D. Wald of the Henry Street Settlement, Morris Hillquit and Dr. George Price of the Board of Sanitary Control of the garment workers as trustees, to be used as a sanatorium for garment workers suffering from tuberculosis. The International Ladies' Garment Workers' Union will appropriate money for remodeling and equipping the buildings. This work will be begun early in the coming year.

Steps to Curb Drug Evil.—At a meeting of the subcommittee of the General Committee on the Drug Evil, composed of national, state and city officials, which met recently in the Criminal Courts Building the amendments drawn up by the general committee were discussed. Two objects which the committee is desirous of accomplishing are to get control over the shipments of drugs, so that they cannot be shipped to Canada and Mexico and then smuggled back, and to insist on the triplicate copies of prescriptions issued by physicians. At present one copy is kept by the physician, the other by the druggist; the third copy would be sent to the local health board which would thus be better able to watch all sales.

Amend Sanitary Code to Prevent Overcrowding in Cars.—According to press reports the department of health at its meeting, on December 16, passed seven amendments to the Sanitary Code with a view to enabling the health commissioner to prosecute criminally the traction companies for failure to relieve the overcrowded conditions on the various lines of transportation in this city. They will also give the commissioner power to commence criminal proceedings for the infraction of laws requiring cars to be properly heated, ventilated and lighted. These amendments were laid before Mayor Mitchell for his approval before being acted on. There is a qualifying phrase to this amendment which provides that it shall be effective only when the transit company is not running the maximum number of cars possible on the line or part of the line where the overcrowding is prevailing. The health department will endeavor to put the amendment into effect by trying to prevent, after the car has received one and one half its seating capacity, any more persons from entering it.

After-Care of Infantile Paralysis.—The New York Committee on the After-Care of Infantile Paralysis Cases includes on its subcommittees about 350 persons. The first of the three great works undertaken by the commission in coordination of the efforts made for the treatment, home care and training of children left paralyzed after poliomyelitis was to distribute the children among the various agencies and to keep track of them. Up to December 12, 51,773 children had been referred to the committee, 5,504 of whom are under treatment or satisfactorily accounted for; 51 have died since discharge from quarantine; 30 have left the state; 152 have not been located and 269 are not yet under treatment. The second measure undertaken by the committee was so to unite and augment the special transportation funds that, if possible, all children needing special transportation to and from the dispensaries might have it. For this purpose $12,000 was secured, and twelve motor busses and fourteen motor cars were provided for the transportation of 1,247 children a week to the dispensaries. The third great undertaking of the committee is an attempt to raise $250,000 to assist in providing treatment, home care and training for these children. About one half of the sum desired has already been secured. The commission has in its membership orthopedists, neurologists and pediatrists, representatives of hospitals and dispensaries which give after-care, and of the Visiting Nurses' Association

and crippled children committees. It is not attempting to pass judgment as to the details of treatment to be given at the dispansaries or in the homes of the patients, but has left this to be decided by the medical authorities.

OHIO

New Buildings for State Hospital Needed.—In the budget for 1917, the State Board of Administration asks $25,000 for a new building for the state hospital. The buildings at present are overcrowded, as the hospital is caring for 500 more patients than its capacity.

Memorial Tablet to Physician.—At the December meeting of the Montgomery County Medical Society it was decided to erect a bronze tablet in the public library, Dayton, in honor of the faithful services rendered to the society by the late Dr. William J. Conklin.

Personal.—Dr. Henry C. Lindersmith has resigned after several years' service as health officer of the village of Sherwood.——Dr. Joshua E. Cooper, Springfield, who has been ill for four weeks, has recovered and resumed practice.——Dr. Clyde B. Terwillegar, Milford, who is now on duty at King Edward's Hospital, London, has been transferred to the Russian war front.——Dr. George D. Lummis, Middletown, has been elected president and Dr. Leo Schram, Dayton, secretary of the Miami Health Officer's Association.——Dr. W. Kelley Hale, Wilmington, has been elected president of the First Councilor District Medical Society.

PENNSYLVANIA

Philadelphia

Personal.—Dr. Samuel G. Dixon, Commissioner of Health of Pennsylvania, was again elected President of the Academy of Natural Sciences at the 104th annual meeting held December 19.——Dr. Charles A. Stout, Cheltenham, has been elected president of the Cheltenham Township Board of Health, and Drs. James A. Brookes, Glenside, and J. Frederick Herbert, Ogontz, have been elected members of the same board.

Jefferson Chair Endowed.—Announcement was made, December 21, at the meeting of the trustees of the Jefferson Medical College that Miss Anna J. Magee had endowed a professorship to be known as the Magee Professorship of the Practice of Medicine and Clinical Medicine. The chair is held by Professor Thomas McCrae. One hundred and fifty thousand dollars was given, it is said, by Miss Magee to perpetuate the chair.

UTAH

Liquor and Drug Addicts.—Dr. Theodore B. Beatty, secretary of the state board of health, in his biennial report to the governor, recommends that the state make provision for treating liquor and drug addicts at its State Mental Hospital.

New Isolation Hospital.—The new Isolation Hospital, in Ogden, recently completed by Weber County at a cost of $7,000, has been formally accepted. The building is located about one mile north of the city limits, has six rooms, including two wards, and will accommodate fourteen patients.

CANADA

Course in Public Hygiene.—The *Bulletin Médical* of Quebec states that the course of instruction in public hygiene for the diploma of expert hygienist opens in January at the Laval University, Quebec. Physicians are eligible to the course, the fee for which is $100. Further details will be supplied by the secretary of the medical department of the university.

Hospital News.—Mr. C. C. Blackader, proprietor of the *Acadian Recorder* has offered to contribute $5,000 for a hospital in Halifax for advanced cases of tuberculosis.——Two more hospitals for returned or sick soldiers are to be opened in Toronto Military District. These will be located in the new Salvation Army Booth Memorial Training School in North Toronto, and the Ontario Hospital for the Insane, Whitby, Ontario, twenty miles from Toronto. Several wards have been retained for returned soldiers in the old Toronto General Hospital building, which is now a Base Military Hospital. Toronto Military District has the best hospital accommodation of any military district in Canada.——In the province of Quebec there are five hospitals for the insane. In the year 1915 the admissions numbered 1,236 as against 1,325 for the previous year. On Dec. 31, 1915, there were, all told, 5,074 patients in those institutions of Quebec.

Army Medical News.—Lieut.-Col. F. G. Finley, Montreal, has been appointed consulting physician to the Canadian hospitals in England. Colonel Finley was chief medical officer of No. 1 Canadian General Hospital, First Canadian Division.——Dr. Charles Valery, Edmonton, Alberta, now in charge of a military hospital in Paris, France, has been awarded a silver medal by the French Red Cross Society. Just a short time ago he was awarded the French War Cross for conspicuous bravery under enemy fire.——Capt. George Miles, Toronto, who has been on active service since the commencement of the war, has been awarded the Military Medal.——Dr. Gordon C. Malcolm, Lac de Bonnet, Manitoba, has joined the staff of a field ambulance for overseas service. He is a graduate of the University of Toronto.——Capt. Austin D. Irvine, Montreal, has been appointed Medical Officer of the 245th Overseas Battalion, Canadian Grenadier Guards.——Two recent additions to the Canadian Army Medical Corps are Drs. McCue, Walkerton, Ontario; Dr. L. V. Turrill, Outlook, Saskatchewan.——Dr. J. S. Mathesion, Brandon, Manitoba, has left for overseas service.——Lieut.-Col. C. W. Rowley, Military Hospital Commission, has been made an Esquire of the Order of St. John of Jerusalem.——Capt. Gordon Gunn, Edmonton, Alberta, has been recommended for distinction for conspicuous bravery on the field of action.——Dr. R. W. Clarke, Bowmanville, Ontario, has resigned his command of the medical section of the 235th Battalion on account of ill health.——Lieut. G. A. Lyons, R. A. M. C., is medical officer of the 25th Middlesex (England) Regiment.——Dr. L. H. Roberts, Freligsburg, Quebec, has received a commission in the Canadian Army Medical Corps.

GENERAL

Prohibition on Cocain and Opium.—Prohibition of import, except under license, of cocain and opium, has been declared by the British government, according to a report from the U. S. Consul General at London in *Commerce Reports*, Dec. 14, 1916. Cocain includes all preparations, salts, derivatives or admixtures containing one tenth of 1 per cent. or more of cocain, or liquid extract of coca containing a like amount of the drug. Opium includes any solid or semisolid mixture containing opium.

Eye, Ear and Throat Specialists Hold Meeting.—At the annual meeting of the American Academy of Ophthalmology and Oto-Laryngology, held in Memphis, Tenn., December 11 to 13, under the presidency of Dr. John E. Brown, Columbus, Ohio, the following officers were elected: president, Dr. William L. Dayton, Lincoln, Neb.; vice presidents, Drs. Edward Stieren, Pittsburgh, Alexander C. Magruder, Colorado Springs, and John Green, Jr., St. Louis; secretary, Dr. Lee M. Francis, Buffalo (reelected), and treasurer, Dr. Secord H. Large, Cleveland (reelected). The next annual meeting will be held in Pittsburgh.

Southwestern Physicians and Surgeons Hold Meeting.—At the annual meeting of the Southwestern Medical and Surgical Association the following officers were elected: Dr. Joel J. Butler, Tucson, Ariz., president; Dr. Robert E. McBride, Las Cruces, N. M., vice president, and editor of the *Southwestern Medical Journal;* Dr. James W. Laws, Lincoln, N. M., second vice president; Dr. Douglas W. Detwiler, El Paso, Texas, secretary-treasurer, and Dr. Abraham G. Shortle, Albuquerque, N. M., trustee for three years. Col. George E. Bushnell, M. C., U. S. Army, Fort Bayard, N. M., was elected president emeritus.

Congress on Medical Education, Public Health and Medical Licensure.—The next Congress on Medical Education, Public Health and Medical Licensure, participated in by the Councils on Medical Education and on Health and Public Instruction of the American Medical Association, the Federation of State Medical Boards of the United States and the Association of American Medical Colleges, will be held at the Congress Hotel, Chicago, Feb. 5 and 6, 1917. The program of Monday morning, February 5, will be on medical education. The program follows:

Opening of the Conference, Dr. Arthur Dean Bevan, Chairman of the Council on Medical Education, Chicago.

"Progress of the Year in Medical Education," Dr. N. P. Colwell, Secretary of the Council on Medical Education, Chicago.

"The Problem of Higher Degrees in Medicine," Dr. Horace D. Arnold, Dean, Harvard Graduate School of Medicine, Boston.

Symposium: "Economy of Time in Preliminary and Medical Education." Dr. John L. Heffron, President of the Association of American Medical Colleges, Syracuse, N. Y. Hon. P. P. Claxton, United States Commissioner of Education, Washington, D. C. President Harry Pratt Judson, University of Chicago.

Discussion: President George E. Vincent of the University of Minnesota, Minneapolis. Professor C. H. Judd, University of Chicago.

On Monday afternoon the general topic will be medical licensure. The program follows:

"Practical Examinations by State Licensing Boards," by Dr. Walter P. Bowers, Secretary of the Massachusetts Board of Registration in Medicine, Boston.

"Minnesota Practical Examinations—As They Are and As We Should Like to Have Them," Dr. Annah Hurd, Member of the Minnesota State Board of Medical Examiners, Minneapolis.

Discussion opened by Dr. W. J. Means, Chairman, Executive Council, Association of American Medical Colleges, Columbus, Ohio.

Report of Examination Held by the National Board of Medical Examiners, Dr. Isadore Dyer, a Member of the National Board and Dean of the Tulane University of Louisiana School of Medicine, New Orleans.

Discussion opened by Dr. John M. Baldy, President, Pennsylvania Bureau of Medical Education and Licensure, Philadelphia.

"The Problem of the Medical Cults," Dr. David A. Strickler, President of the Federation of State Medical Boards and Secretary of the Colorado State Board of Medical Examiners, Denver.

Discussion opened by Mr. Harry E. Kelly, formerly attorney for the Colorado State Board of Medical Examiners, Chicago.

On Tuesday morning public health topics will be discussed. The program follows:

Opening of the Conference, Dr. Frank Billings, Chairman of the Council on Health and Public Instruction, Chicago.

"Public Health Training in Medical Colleges," Dr. George E. Vincent, President, University of Minnesota, and President Elect, Rockefeller Foundation, Minneapolis.

"What Training Should the Public Health Officer Receive in Medical Colleges," Dr. Hermann E. Biggs, State Commissioner of Health, New York.

Discussion opened by Dr. Victor C. Vaughan and Dr. S. J. Crumbine.

On Tuesday afternoon there will be a popular discussion of topics relating to medical licensure. The program follows:

"State Regulation of the Practice of Medicine an Educational Problem," Prof. Edmund J. James, President, Illinois State University.

"The State Regulation of the Practice of Medicine as an Executive Problem," Honorable James M. Cox, Governor of Ohio.

Discussion opened by Dr. C. St. Clair Drake, Dr. W. B. Hinsdale, and Dr. William P. Best.

FOREIGN

Experimental Research on Leprosy.—The *Dermatologische Wochenschrift* states that Privat-Dozent J. Kyrle of the University of Vienna has been awarded 1,000 kronen ($200) by the Austrian Academy of Sciences to continue his experimental researches on leprosy.

Prize Offered for Best Artificial Limb.—The Istituto Ortopedico Rizzoli of Bologna has inaugurated a nation-wide exposition of orthopedic appliances, to be held at Bologna in February under the auspices of the national federation of committees engaged in welfare work for blinded, mutilated and crippled soldiers. The institute has announced a prize of 5,000 lire for the best appliance, and is urging others to collect funds for additional prizes.

Monument to Llobet at Buenos Aires.—The unveiling of the monument to this leading Argentine surgeon occurred September 24, on the grounds of the Hospital Rawson while the first national medical congress was in session. For twenty years A. F. Llobet was surgeon-in-chief of this large hospital, founded through his efforts. This is the third memorial to pioneer surgeons in Buenos Aires, the monuments to Pirovano and to Aguilar being on the grounds of two other hospitals.

Retirement of Murri.—The professor of clinical medicine at the University of Bologna, Italy, Augusto Murri, has retired from his post, having reached the age limit of 75, and will henceforth be professor emeritus. He has been connected with this university since 1876, and has published numerous works on hemoglobinuria, the cardiovascular system, regulation of the temperature, etc. The fiftieth anniversary of his entering on his profession was celebrated in 1914 with much ceremony throughout scientific circles in Italy and by his friends elsewhere.

Women Physicians in Italy for Medical Service with the Troops.—The *Revista critica di Clinica Medica* states that the Italian minister of war has done away with all measures discriminating between civilian men and women physicians in the active military service. Women physicians are urged to accept positions in the advanced lines, stating their qualifications and specialties in applying for positions. Those with less than five years of medical practice will be appointed "medical sublieutenant"; those with more than five years of practice will be medical lieutenants, and those with fifteen years' practice will rank as captains.

PARIS LETTER

PARIS, Nov. 30, 1916.

The War

A NEW DISEASE IN THE ARMY: RELAPSING FEBRILE HEMORRHAGIC JAUNDICE

Recently there has prevailed among the troops, at different points of the front, a disease resembling in its clinical manifestations, febrile hemorrhagic jaundice (Weil's disease). There is present in the blood in these cases a special spirillum which can be inoculated in the guinea-pig. This disease, which has also been called icterohemorrhagic spirochetosis, has been observed in Japan by Itana and Ito. In France it has been studied by Drs. Louis Martin and Auguste Pettit. It has recently formed the subject of an interesting communication made by Professor Chauffard of the Académie de médecine. Although the symptoms of icteric spirochetosis resemble quite closely those of the other serious jaundices, there are some among them which are peculiar, notably the injection of the conjunctiva. The course of the disease is that of an acute hepatonephritis with frequent relapses. Cases have, however, been observed which have followed the course of simple febrile septicemia with various complications, such as bronchopneumonia and iritis, but without jaundice. This disease seems to develop preferably in muddy surroundings, in the neighborhood of stagnant or contaminated water or of drains, and in the trenches. It is contagious, and the urine seems to be the best recognized vehicle by which it may be conveyed. For this reason, M. Justin Godart, undersecretary of state for the army medical service, has given instructions to the effect that all cases of febrile relapsing jaundice shall be sought out with the greatest care, in order to insure their rapid isolation in a quarantine service, where the necessary measures are taken to disinfect the urine.

AMERICAN RELIEF WORK

M. Millerand, formerly minister of war, recently gave an address at the Sorbonne on the relief work of the United States. He chose for special mention the service rendered by the American Relief Clearing House (THE JOURNAL, Oct. 30, 1915, p. 1567), by means of which the charitable effort of Americans is centralized at Paris.

THE MOBILIZED CHEMISTS

The army commission of the Chamber of Deputies has adopted the resolution proposed by MM. Henri Paté and Jean-Louis Breton, granting to military chemists, for the duration of the war, military rank equivalent to that of holders of university degrees and diplomas of chemists. This measure, which is applicable to the mobilized chemists employed in their specialty (divisional toxicologic laboratories at the front, and laboratories of the artillery, of the health service, of the commissariat, of the aviation service, of the engineering service, of the chemical supplies for the army, and of the service for the chemical control of war industries), will recompense according to their merits the scientists and technicians who have done so considerable a work. At present, military chemists cannot qualify for the ranks of commissioned officers. The measure thus demanded could be carried out without confusion in the services; a ministerial decree, which classed in one body, with commissioned rank, the chemists at present employed, would be sufficient.

Death of Dr. Doyen

Dr. Eugène-Louis Doyen has just died at the age of 57 years. He was the son of Dr. O. Doyen, professor of anatomy at the school of medicine at Rheims, in which town he was born, Dec. 16, 1859. He commenced his medical studies at Rheims, but soon removed to Paris where he completed them. In 1881 he was appointed intern for the hospitals, and in 1885 presented his thesis for the doctorate. He then returned to Rheims, where he acted successfully as demonstrator of anatomy, lecturer on surgical pathology, and finally as extra professor of surgery and midwifery. In 1896 he gave up this post and established himself at Paris. His personality was the subject of much discussion, and the methods of publicity which he adopted were severely criticized, not always unjustly; but it must be admitted that as an operator he was possessed of great skill and might be termed a virtuoso of the scalpel.

Death of Professor Tripier

Dr. Raymond Tripier, former professor of pathologic anatomy at the Faculté de médecine at Lyons, has died at the age of 78. He published a work on general pathologic anatomy in 1904, and another on anatomico-clinic studies of the heart, blood vessels and lungs in 1909.

LONDON LETTER

LONDON, Dec. 4, 1916.

The War

EFFECT OF THE WAR ON THE MEDICAL PROFESSION

At the General Medical Council, Sir Donald Macalister in his presidential address, referring to the war's influence on the supply of physicians, said that he had submitted to the Army Council an analysis of the medical students of the United Kingdom. It showed:

	Men	Women	Total
First year students	1,422	636	2,058
Second year students	783	295	1,078
Third year students	519	163	682
Fourth year students	1,078	145	1,223
Final year students	922	140	1,062

Of the first and second years, about 500 are males under 18 years of age in May, 1916. In the other years all are over 18. Fourth and final year students have already been directed by the Army Council to pursue their studies; the others, at the schools of Great Britain, are or will soon become subject to recruitment under the military service act. He called the attention of the military authorities to the shortage of students in the second and third years, and suggested that, in the interest of the state, certain steps should be taken to diminish the apprehended danger from further depletion. The Army Council, having considered these suggestions, recently issued orders to the effect that medical students whose physical condition does not allow them to be classed as "fit for general service" are to be relegated to the reserve on condition that, while left to pursue their professional studies, they enroll themselves in the Officers' Training Corps. The call for qualified physicians for our ever growing forces is more insistent now than ever. The War Office would gladly engage 400 more physicians if they were forthcoming. The Central Committee established for the purpose of assisting the profession and the government in securing a proper allocation of the available medical men, having regard to the requirements of the military and of the civilian services, have to decide what men can be spared from civil practice for military service. It has also to protect the interests of those absent on duty with the forces. With the aid of local committees in every district, schemes have been devised under which the remaining physicians cooperate for these purposes, and in many areas every member of the profession has joined to further them. If the voluntary organization of the profession fails to meet all the requirements of the medical services, we may have to face some form of legislative compulsion for districts that are backward in their response to the calls of patriotism.

THE PRACTICES OF PHYSICIANS WHO HAVE JOINED THE ARMY

The means adopted to conserve the practices of the large number of physicians who have joined the army have been described in previous letters to THE JOURNAL, but, as might have been expected with the prolonged absence, have not proved altogether satisfactory. Complaints have reached the Central Medical War Committee that some physicians are not recognizing as fully as they should their moral obligations to professional brethren who have undertaken military service at great sacrifice. It seems that the practices of many have almost disappeared. This is said to be mainly due to the fact that physicians do not take the trouble to ascertain whether or not new patients belong to the practices of the absent men. The Central Medical War Committee has therefore made the following suggestions: 1. On a new patient presenting himself, he should be asked the name of the physician who last attended him. If his physician is absent on service and has left a locum tenens, an attempt should be made to induce the patient to go to the locum tenens. 2. If the last physician who attended is on military service, it should be explained to the patient that attendance will willingly be given on behalf of that physician and on no other terms. 3. Any attendances on behalf of such patients should be carefully and separately recorded, and a list of such attendances sent at regular intervals to the representative of the absentee. 4. An attempt should be made to ascertain the fees charged by the absentee, and a charge not less than this should be made on his behalf. 5. Accounts rendered on behalf of the absentee (if sent in by the deputy) should mention the absentee's name, and money received should be divided according to the scheme adopted by the Local Medical War Committee. 6. The rule dividing the fees should apply to all kinds of work. No exception for example, should be made as regards operation, inquests, consultations and anesthetics, unless some special arrangement has been arrived at as regards particular services by the Local Medical War Committee after consulting the local profession. 7. New patients introduced by the patient of an absentee should be regarded as belonging to the absentee's practice. 8. In cases in which the patient's frequent change of physician leads to doubt as to who should be regarded as the regular attendant, the absentee should be given the benefit of the doubt. 9. No patient attended on behalf of an absentee should be attended by the deputy for at least one year after the absentee's return. 10. The greatest discretion should be used as to the introduction of a partner or assistant or in commencing a new practice in an area from which men are absent on service. 11. Great care should be taken in the buying and selling of practices. Newcomers to a district should be doubly scrupulous in regard to the practices of absentees and should at once ascertain and join in any arrangements that have been made for the protection of absent physicians. 12. The honor of the profession is especially involved when a vacancy occurs through the death of a physician on service. Definite arrangements have been made to meet such a contingency in some areas. Every assistance should be given in enabling the successor to the practice to have such a fair start as will entitle the dependents on the practice to expect a fair price for it. The local physicians should carry out the same procedure with regard to the successor as they had undertaken with regard to the man who has fallen while on service, namely, refuse to attend the patients of the practice except on behalf of the successor, for a period of at least a year after the practice has been taken over.

Another scheme to help the physicians who have joined the army has been started in the form of a loan fund for which an appeal is being made to the whole profession. The idea is that those physicians who have lost their practices by joining the army will be lent money on their return to buy new practices. At the offices of the British Medical Association, a meeting to inaugurate this patriotic fund was held. It was attended by the principal office holders of the association, and representatives of the Royal College of Physicians of London, the Royal College of Surgeons of England, and the Royal College of Surgeons of Edinburgh.

BERLIN LETTER*

BERLIN, Nov. 7, 1916.

Causes of Deaths in Prussia in 1914

The total number of deaths occurring in Prussia in 1914 was 766,828. The death rate per ten thousand population for the various diseases reported was as follows (figures in parenthesis are for the year 1913): Accidents and violence, 28.24 (4.06); gastro-intestinal diseases, 20.11 (17.39); senility, 17 (15.71); diseases of the circulatory organs, 16.12 (15.09); tuberculosis, 13.87 (13.65); pneumonia, 11.84 (12.03); epilepsy and other diseases of the nervous system, 10.54 (10.31); congenital weakness and errors of development, 10.39 (10.25); diseases of the respiratory tract, 8.29 (7.85); cancer and other new growths, 8.09 (8.24); diseases of the genito-urinary organs, 2.92 (2.87); diphtheria and croup, 2.17 (1.81); suicide, 2.08 (2.21); whooping cough, 1.68 (1.89); scarlet fever, 1.44 (1.08); erysipelas and wound infections, 1.3 (0.92); measles and German measles, 1.02 (1.75); childbirth, 0.89 (0.96); typhoid, 0.9 (0.34); influenza, 0.74 (0.72); other infectious diseases, 0.44 (0.34); murder and manslaughter, 0.35 (0.21); infectious diseases of animals, 0 (0.01); other named causes of death, 16.51 (15.89); unnamed and unknown causes, 4.59 (3.39).

Infectious diseases caused 151,542 deaths—19.75 per cent. (145,081—23.51 per cent.); tuberculosis, 58,577—7.64 (56,861—

* To this letter was attached the following note:

Für den Zensor.—Sämtliche Artikel sind vom zuständigen Sanitätsamt zur Ausfuhr ins neutrale Ausland genehmigt. Bemerkungen, die trotzdem beanstandet werden, bitte ich zu durchstreichen (oder herauszuschneiden) damit Rücksendung des Briefes und überflüssige Portowiederholung vermieden wird.

To the Censor.—All the articles herein have been passed by the local censor for exportation into neutral countries. Please cut out any part of these articles which is disapproved so that it will not be necessary to return the letter to the writer, and further postage expense will be avoided.

9.16); pneumonia, 50,002—6.52 (50,084—8.07); diphtheria and croup, 9,154—1.19); whooping cough, 7,113—0.93 (7,859—1.27); scarlet fever, 6,067—0.79 (4,506—0.73); erysipelas and other wound infections, 5,506—0.72 (3,818—0.62); measles and German measles, 4,325—0.56 (7,286—1.17); typhoid, 3,785—0.49 (1,433—0.23); influenza, 3,121—0.41 (3,010—0.49); puerperal fever, 2,010—0.26 (1,957—0.32); other infectious diseases, 1,861—0.24 (1,415—0.23); infectious diseases of animals, 21—0 (22—0).

Hysteria Among Soldiers

Professor Nonne of Heidelberg recently demonstrated before the Hamburg Medical Society three cases in which hysterical symptoms developed—in two cases on the basis of an acute articular rheumatism and in one on the basis of typhoid. Two were cases of superior monoplegia; one was a case of hemiplegia. One patient resisted for eight months the usual forms of mechanotherapy and waking suggestion, but speedily recovered under hypnotic suggestion. Nonne also demonstrated a spontaneous relationship between the sensory disturbance and the motor paralysis, showing that the former disappeared spontaneously with the latter. A fourth case shown was one of deaf-mutism. The patient had received training in lip reading for five months without result. In a single hypnotic session Nonne removed the syndrome entirely. The condition was reproduced and again removed in like manner. In a fifth case Nonne showed experimentally that extensive muscular tremor, such as follows in most cases of prolonged loss of consciousness from shock, is of functional origin. The patient had received a severe shock, but returned to duty at the front after a few days. He suffered a slight flesh wound and was sent to the hospital. He dreamed that he was in action, and that a shrapnel bomb exploded beside him; he became badly frightened, wakened, and had an intense tremor. Such cases are refractory to hypnotic suggestion. A sixth patient had presented a hysterical syndrome for fifteen months. Following prolonged loss of consciousness, incident to a shell explosion, the right leg had become rigidly contracted, with tremor of the head and left arm and loss of speech. The patient had resisted all efforts at treatment in five different hospitals. In one sitting Nonne succeeded in restoring speech and suppressing tremor by means of hypnosis while at the second sitting he succeeded in removing the rigid contraction of the leg muscles. The man has now completely recovered. In this case also Nonne showed how he could reproduce and remove the symptoms by means of hypnosis.

Marksmanship and Alcoholism

At a recent meeting of the Temperance Society of German Physicians, Kraepelin discussed the results of a shooting tournament held in the fall of 1908 under the direction of the Bavarian Ministry of War for the purpose of determining the influence of alcohol on marksmanship. Twenty carefully selected marksmen fired 27,000 shots in sixteen days. Previous results were confirmed, namely, that a single small dose of alcohol—in this case, 40 gm. or about the equivalent of 1 liter of beer—taken in the morning, had a detrimental effect on accuracy of aim five minutes later; the most pronounced effect being noted from twenty-five to thirty minutes after the liquor had been imbibed. The average loss in accuracy was about 3.1 per cent. The effect of the alcohol was not so great when taken after the noon meal, nor was it apparent as soon, confirming the belief that alcohol taken after a heavy meal does not have as injurious an effect as when taken on an empty stomach or after a light meal. In a few instances, marksmanship improved for a short time after the ingestion of alcohol; then it became very inaccurate, the loss in marksmanship being as high as 9, 10 and 12 per cent. in the case of eleven men. Self-deception, so commonly associated with alcohol ingestion, was evident in these cases. It should be remembered that the subjects of these experiments were in prime physical condition. Similar experiments made on soldiers in time of war would show still greater loss of accuracy since loss of sleep, overexertion, insufficient nutrition and psychic disturbances would exert an unfavorable influence.

German Psychiatric Society

At the meeting of the German Psychiatric Society in Munich, September 21-22, Professor Bonhoeffer of Berlin narrated war experiences with regard to the etiology of psychopathic conditions, emphasizing the influence of exhaustion and emotions. Among the Serbian prisoners, physical exhaustion was intense. There were great emaciation, diffuse muscle atrophy and dilatation of the heart, edema of the lower extremities, and extraordinary weakness, in some instances necessitating months of rest in bed, leading to increased morbidity and mortality, increasing the susceptibility to tuberculosis and causing slow healing of phlegmons. In the case of the older prisoners there was a marked inability to make a good recovery. So far as the nervous system was concerned, the expressions of this state of exhaustion consisted in an increase in the mechanical muscle irritability in the form of percussion swellings, mild neurotic symptoms and the auditory and visual hallucinations of exhaustion. Real psychoses, the result of such exhaustion, have not been noted, although an acute nervous exhaustion, manifesting itself by insomnia, moroseness and hyperesthesias, does occur. Still such psychoses do not occur among the Serbians.

The development of cerebrospinal syphilis is said to be influenced favorably by exhaustion, but there is no proof at hand to show that recently acquired syphilis has a predilection for the nervous system. Epilepsy developing during the campaign often had a syphilitic basis and constituted the only cerebral symptoms of syphilis.

The psychic results of fear were also discussed. It was stated that while fear may be productive of various mental or psychic disturbances, the normal brain is quite resistant to any real pathologic influence of the fear thought or emotion; in other words, if fear does cause a psychopathy, there must have been some underlying pathologic condition in the brain which made it possible or paved the way for a further pathologic condition to develop.

Professor Wilmanns of Heidelberg discussed the fitness for military service of the psychopath. Sufferers from hysteric war neuroses, he says, are more fit for service at the front than they would be at home; therefore any such as must be sent to a hospital for sickness or wounds should not be sent to a base hospital but should be kept in a field hospital, thus keeping them fit for further military service when they are discharged from the hospital. If they must be sent to a base hospital, then they cannot be returned to the front, but should be assigned to garrison duty or as workers. On the whole, it is preferable to assign these men to duty in a commercial war industry or to allow them to return home and resume their customary vocation.

Prof. E. Meyer of Königsberg discussed the effect of various psychoses on military fitness. Among 2,561 cases of psychic and nervous disturbances were 194 cases of dementia praecox, 43 cases of manic-depressive insanity (27 existing before the war), 66 cases of paralysis (27 existing before the war), 63 cases of epilepsy (59 existing before the war) and 5 cases of arteriosclerotic insanity. In most of these cases the disease had existed prior to enlistment or service at the front, and in only rare instances could wounds, shock or illness of any kind be considered as etiologic factors in the production of these nervous diseases. The clinical manifestations were no different from what they are in civil life; therefore their existence cannot be regarded a reason for declaring the victim unfit for military service. Finally, the conclusions reached are that (1) there is no such disease entity as a military or war psychosis, and (2) persons affected with a psychosis are less apt to be rendered unfit for service at the front than for service at home.

Marriages

ROBERT RALPH WALTON, M.D., Spokane, Wash., to Miss Mabel Monson of Elk River, Idaho, at Spokane, December 1.

WALTER E. KIEFER, M.D., Buffalo, to Miss Clara Leota Bartles of Martinsburg, W. Va., at Easton, Pa., December 4.

CAPT. THOMAS DUPUY WOODSON, M. C., U. S. Army, to Miss Pocahontas Butler of Elliott, N. C., November 30.

CHARLES G. ZIMMERER, M.D., Norfolk, Neb., to Miss Margaret Ceil Fallon of O'Neill, Neb., November 30.

MICHAEL JOSEPH MAGUIRE, M.D., Naches, Wash., to Miss Margaret Flett of Sprague, Wash., December 2.

OSWALD HOPE ROBERTSON, M.D., New York, to Miss Ruth Allen of New Bedford, Mass., recently.

WALLACE SIMONDS, M.D., Sedalia, Mo., to Miss Ethel Murray of Holden, Mo., November 30.

GLEN ROSS YOUNG, M.D., Detroit, to Miss Avis Lydia Green of Corunna, Mich., December 6.

DONALD S. NUMBERS, M.D., to Miss Zoe Dunn, both of Payette, Idaho, November 29.

Deaths

George Ben Johnston, M.D., Richmond, Va.; New York University, New York, 1876; aged 63; a Fellow of the American Medical Association, and a member of the House of Delegates, representing the Medical Society of Virginia in 1904 and 1905; a well known surgeon; died suddenly at his home, December 20, from acute dilatation of the heart.

Dr. Johnston was a grandson of Dr. John Floyd, once governor of Virginia, and the son of United States Senator John W. Johnston of that state. In 1878, Dr. Johnston located in Richmond and soon became recognized as a leader in surgery. He was elected professor of anatomy at the Medical College of Virginia in 1884. Nine years later he was elected professor of didactic and clinical surgery, and in 1907 he was made professor of gynecology and abdominal surgery. In 1893, he organized and established the Hospital of the Medical College of Virginia, which afterward became the Old Dominion Hospital. Ten years later, 1903, he organized and built the Williams Memorial Hospital, and in 1909, he and his associate, Dr. Murat Willis, built the Johnston-Willis Sanatorium and the following year acquired the Abington Hospital. Dr. Johnston had been president of the American Surgical Association, of the Medical Society of Virginia, of the Southern Surgical and Gynecological Association and of the Norfolk and Western Railway Surgeon's Association. He has always been a leader in medical legislation and as chairman of the legislature committee of the state society secured one of the best laws extant for the protection of the people against charlatans. Dr. Johnston was a frequent contributor to surgical literature, a man of large ideas, clear vision and definite opinions, powerful in council.

John George Leitch, M.D., Philadelphia; University of Pennsylvania, Philadelphia, 1910; aged 40; formerly chief resident physician of the Polyclinic Hospital, and a member of the staff of the Howard Hospital, Philadelphia; first lieutenant, Medical Reserve Corps, U. S. Army, on duty with the Sixth U. S. Cavalry and in charge of the Army Hospital at Marfa, Texas; died at that place, December 12, from paratyphoid fever.

David Rittenhouse Porter, M.D., Kansas City, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1865; Bellevue Hospital Medical College, 1872; aged 78; a member of the Missouri State Medical Association; one of the founders and professor of internal medicine and lecturer on the duties of life insurance examiners in the University of Kansas; a veteran of the Civil War; died at his home, December 14.

Walter James Dodd, M.D., Somerville, Boston; University of Vermont, Burlington, 1908; aged 46; a Fellow of the American Medical Association; for many years in charge of Roentgen-ray work at the Massachusetts General Hospital; a member of the Second Harvard Surgical Unit; who had undergone a number of surgical operations on account of Roentgen-ray burns; died at his home, December 18.

Jabez Fisher, M.D., Fitchburg, Mass.; Harvard Medical School, 1851; aged 92; oldest surviving member of the Massachusetts Legislature, in which he served as senator in 1855 and 1856; a trustee of the Fitchburg Public Library; president of the Fitchburg Cooperative Bank for twenty-two years; died at his home, December 15.

Robert Brine Harrington, M.D., Grand Junction, Colo.; Tufts College Medical School, Boston, 1905; aged 37; a Fellow of the American Medical Association; for four years health officer of Mesa County, Colo., and Grand Junction; died in St. Mary's Hospital, Grand Junction, December 8, from pulmonary hemorrhage.

Andrew J. Watson, M.D., Cairo, Egypt; Jefferson Medical College, 1860; aged 82; who was ordained in 1861 and went as a missionary to Egypt; professor of systematic theology in the Cairo Theological Seminary and later president of the Cairo University; one of the foremost authorities on Arabic; died in Cairo, December 9.

George Albert Blair, M.D., Chambersburg, Pa.; College of Physicians and Surgeons, Baltimore, 1880; aged 58; a specialist on diseases of the eye, ear, nose and throat; who received injuries while riding in a railway car four weeks before; died in the Presbyterian Hospital, Philadelphia, December 6.

Elroy B. Whitaker, M.D., Barre, Vt.; New York Homeopathic Medical College, New York, 1868; aged 71; a member of the Vermont State Board of Registration for seven years; died at his home, December 7.

Joseph J. Pierron, M.D., Chicago; College of Physicians and Surgeons, Chicago, 1893; aged 61; chief surgeon to the Chicago Terminal Traction Railroad Company and local surgeon of the Chicago Great Western Railway; died at his home, December 14, from diabetes.

Howard C. Reamer, M.D., Danville, Calif.; University of Maryland, Baltimore, 1885; aged 51; died in a hotel in Baltimore, December 12, from the effects of a gunshot wound, self-inflicted, it is believed, with suicidal intent, while despondent on account of ill health.

Charles T. Gerlach, M.D., Getaway, Ohio; Kentucky School of Medicine, Louisville, 1887; aged 41; a member of the Ohio State Medical Association; died at the home of his father in Huntington, W. Va., December 9, from septicemia, following an infected wound of the hand.

William Everett Palmer, M.D., Hornell, N. Y.; College of Physicians and Surgeons in the City of New York, 1882; aged 78; formerly president of the Hornell Medical and Surgical Association; died at his home, December 11, from cerebral hemorrhage.

Elias J. Brock, M.D., Denton, Texas; Tulane University, New Orleans, 1861; aged 79; a member of the Walker Filibustering Expedition into Central America in the late fifties; a Confederate veteran; died at his home, December 8, from nephritis.

Thomas Leigh Lanigan, M.D., Denver; Medical College of Indiana, Indianapolis, 1905; aged 34; died at El Paso, Texas, December 7, from the effects of a gunshot wound, believed to have been self-inflicted, with suicidal intent, while temporarily insane.

Jirah Dewey Buck, M.D., Cincinnati; Cleveland University of Medicine and Surgery, 1864; aged 78; dean and professor of practice of medicine in Pulte Medical College, Cincinnati; a veteran of the Civil War; died at his home, December 13.

McClellan C. Kash, M.D., Salyersville, Ky.; College of Physicians and Surgeons, Keokuk, Iowa, 1891; aged 54; a member of the Kentucky State Medical Association; died in Daysboro, Ky., October 17, from cerebral hemorrhage.

Benneville H. Miller, M.D., Mohnton, Pa.; Southern Homeopathic Medical College, Baltimore, 1889; for twenty-five years a clergyman of the Evangelical Church; died at his home, November 23, from cerebral hemorrhage.

Henry Rolfe Dupuy, M.D., Norfolk, Va.; Louisville (Ky.) Medical College, 1874; aged 71; a member of the Medical Society of Virginia; for several years health commissioner of Norfolk; died at his home, December 11.

Eugene L. Deaderick, M.D., Jonesboro, Tenn.; Jefferson Medical College, 1873; aged 73; formerly a member of the Tennessee State Medical Association; died at Memorial Hospital, Johnston City, Tenn., December 4.

Luther B. Shumaker, M.D., Pharisburg, Ohio; Starling Medical College, Columbus, Ohio, 1898; aged 40; a member of the Ohio State Medical Association; died at his home, December 10, from heart disease.

Charles Alva Davis, M.D., Bakersfield, Calif.; Vanderbilt University, Nashville, Tenn., 1881; aged 60; formerly president of the California Mutual Benefit Society, San Francisco; died at his home, December 7.

Charles Burleigh, M.D., Waverly, Mass.; Medical School of Maine, Brunswick, 1891; aged 61; for many years a resident of Malden, Mass.; died at his home, recently, from cerebral hemorrhage.

Abdallah M. Howe, M.D., Wichita, Kan.; Miami Medical College, Cincinnati, 1873; aged 71; a specialist on diseases of the eye, ear, nose and throat; died at his home, December 12, from pneumonia.

George Folet Wells, M.D., Lakeport, Calif.; Northwestern Medical College, St. Joseph, Mo., 1889; aged 72; a practitioner for fifty-one years; died at his home, November 21, from heart disease.

Roe Foreman McClure, M.D., Albuquerque, N. M.; Kansas City (Mo.) Medical College, 1911; aged 28; died on his ranch, near Nara Visa, N. M., November 30, from a nervous breakdown.

Abraham Goltman, M.D., Sioux Falls, S. D.; McGill University, Montreal, 1896; L.R.C.P., L.R.C.S., L.R.F.P.S., Glasgow, 1914; aged 42; died in a sanatorium in Montreal, September 15.

Philip M. Lewis, M.D., Lecompton, Kan.; Kansas City (Mo.) Medical College, 1884; aged 76; a resident of Kansas for more than sixty years; died at his home, December 5.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TANRET'S PELLETIERINE

To the Editor:—Please print the formula of "Tanret's Pelletierine." I think it is given in the 1908 edition of the French Pharmacopeia, p. 445. Is the pelletierin tannate sold in the United States as efficient as the French proprietary preparation, and if so what would be the corresponding dose?

M. CARLTON VAUGHAN, M.D., Buffalo.

ANSWER.—The exact composition of "Tanret's Pelletierine" is not known, but it is believed to be similar in a general way to the pelletierin tannate described in the U. S. Pharmacopeia. This is said to be a mixture in variable proportions of the tannates of the four chief alkaloids of pomegranate. "Tanret's Pelletierine" is not described in, nor is there any formula for its preparation in the 1908 Pharmacopée française. Pelletierin sulphate, however, is described in the French Pharmacopeia, and a method for its preparation given. The alkaloids of pomegranate, *Punica granatum*, are known in this country as punicin, isopunicin, pseudopunicin, methylpunicin and isomethylpunicin. In European literature, the name "pelletierin," with its combinations, is used in place of "punicin." The tenifuge properties of pomegranate are believed to lie chiefly in the punicin and isopunicin constituents; consequently the activity of the various crude commercial mixtures of the salts of the pomegranate alkaloids would depend on the relative proportions of these two alkaloids present. The pelletierin sulphate described in the 1908 French Pharmacopeia is said to be composed chiefly of punicin (pelletierin) sulphate and isopunicin (isopelletierin) sulphate.

O-DO-CURE

To the Editor:—What is the composition of O-Do-Cure? It is a perspiration remedy manufactured by the O-Do-Cure Toilet Company, Chicago.

L. P. N.

ANSWER.—Two original bottles (price 50 cents each) of O-Do-Cure were submitted to the chemical laboratory for examination.

Each bottle of O-Do-Cure contained about 90 c.c. (3 fluidounces) of green colored liquid, highly perfumed and having an acid reaction. The specific gravity at 15.6 C. was 0.9648. Qualitative tests demonstrated the presence of alcohol, boric acid and salicylic acid. The presence of 40 per cent. alcohol was declared on the label. Quantitatively, each 100 c.c. was found to contain:

Alcohol (absolute)	34.00 c.c.
Boric Acid (H_3BO_3)	5.93 gm.
Salicylic Acid ($C_6H_4(OH)COOH$)	0.26 gm.

The following statements appear on the label:

"A Daily Toilet Requisite for Perspiration.
"A Perfect Deodorant Toilet Water.
"Use it daily after the morning bath. It refreshes and purifies the pores; prevents odor—yet does not interfere with natural perspiration. Used freely to relieve tired, burning perspiring feet, it has no equal."

A solution essentially similar—except for the extravagant price—could be compounded as follows:

Salicylic acid	1 grain
Boric acid	30 grains
Alcohol	3 fluidrams
Perfume	sufficient
Water	to make 1 fluidounce

MERCURIC BENZOATE IN SODIUM CHLORID SOLUTION

To the Editor:—After reading Dr. Loyd Thompson's article on "The Intensive Treatment of Syphilis" (THE JOURNAL, Sept. 2, 1916, p. 734), I wrote to one of the prominent pharmaceutical laboratories to inquire if they would manufacture an ampule of mercuric benzoate in sodium chlorid solution as used by Dr. Thompson. The pharmaceutical house informed me that it was quite likely that mercuric benzoate added to a solution of sodium chlorid would result in the formation of mercuric chlorid and sodium benzoate. Kindly give me your opinion as to whether or not such an action would occur.

A. E. KINNEY, M.D., Astoria, Ore.

ANSWER.—It is believed that when simple mercuric salts are treated with an excess of sodium chlorid solution, a complex mercury compound is produced in which the mercury is a part of the acid radical. If mercuric benzoate is treated with an excess of sodium chlorid solution there should be formed a sodium mercuric chlorid, which is soluble. It is safe to assume that the therapeutic effect of a given weight of mercury as mercuric benzoate in a stated volume of sodium chlorid solution will be the same as that of the same weight of mercury in the form of mercuric chlorid in the same volume of sodium chlorid solution.

HYPODERMIC INJECTION OF QUININ

To the Editor:—In this part of the country we have a great amount of malarial infection during the whole year, and especially during the summer and fall months. Of course, as these conditions arise, it is absolutely necessary to use quinin hypodermically. A great deal of complaint has arisen from several physicians regarding the unpleasant, and at times alarming effects arising from the use of quinin in this way; that is, the formation of a necrotic area around the site of the injection of the medication. It has been my experience, and the experience of my fellow practitioners in this and surrounding counties, to have very severe conditions of this kind. It is not an infection, for all aseptic precautions are observed, but rather a necrosis of the tissues that takes place several days after the medicine has been used. I have talked to representatives of the various pharmaceutical houses, but they are at a loss to account for this very unpleasant result. Please explain it in THE JOURNAL. It seems that the attention of the various manufacturers of hypodermic quinin should be called to this matter, and if at all possible by better chemistry, to eliminate this too frequent occurrence after quinin hypodermic medication. Your explanations and suggestions will be greatly appreciated.

OWEN H. WILLIAMS, M.D., Savannah, Tenn.

ANSWER.—Necrosis and abscess following the injection of quinin are not, as our correspondent seems to believe, due to any impurity in the drug. Strong solutions of pure quinin salts will produce necrosis by their direct action on the tissues and by preventing phagocytosis. By taking proper precautions the number of these accidents can be greatly reduced, but the danger of their occurring cannot be entirely eliminated. For this reason all authorities are unanimous that the administration of quinin by injection should be confined to the most urgent cases of pernicious malaria. In all other cases it should be administered by mouth. As asepsis is not nowadays likely to be neglected, the two most important points to bear in mind are, first, that the injection must be intramuscular and not hypodermic, and, second, that the solution should be as dilute as is practicable. The most suitable salt for use is quinin dihydrochlorid or quinin and urea hydrochlorid, the latter having the advantage of being a local anesthetic. Three grains of the double salt are equivalent to 2½ grains of quinin dihydrochlorid. A 10 per cent. solution is the strongest that should be used, and injections may be made into one or several places, according to the quantity. The initial dose should ordinarily be 15 grains, followed by injection of from 5 to 10 grains every six or eight hours as long as the symptoms demand it. For a child under 5 years of age, the first dose may be 1½ grains for each year. To repeat, the most important points are: a dilute solution, an intramuscular injection, and the use of the method only in the most urgent cases.

USE OF ANTIPNEUMOCOCCUS SERUM—PERTUSSIS VACCINE

To the Editor:—1. Is the intravenous injection of antipneumococcic serum in cases of lobar pneumonia considered beneficial? Has the treatment passed the experimental stage?

2. Do the results with pertussis vaccine justify its use as a routine measure?

B. W. WALKER, M.D., Carthage, Miss.

ANSWER.—1. The injection of the proper antipneumococcus serum in pneumonia caused by pneumococcus Type I is believed to be beneficial, but the serum treatment of pneumonia must be said to be still in the experimental stage. It should be borne in mind that the pneumococci fall into various groups according to their immunologic relations—at least four groups—and that it would be as futile to use a serum specific for Group I in a case of pneumonia caused by Group III as it would be to use antimeningococcus serum in cases of meningitis caused by parameningococci or other bacteria. Hence the first requisite for a rational serum treatment in pneumonia is the determination of the particular type of the pneumococcus concerned in the given case.

2. The reply to this question appeared in THE JOURNAL, Sept. 16, 1916, page 897.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALABAMA: Montgomery, Jan. 9. Chairman, Dr. W. H. Sanders, Montgomery.

ALASKA: Juneau, Jan. 3. Sec., Dr. H. C. DeVighne, Juneau.

ARIZONA: Phoenix, Jan. 2. Sec., John Wix Thomas, 306 Goodrich Bldg., Phoenix.

CALIFORNIA: Sacramento, Jan. 9. Sec., Dr. C. B. Pinkham, Forum Bldg., Sacramento.

COLORADO: Denver, Jan. 2. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

DISTRICT OF COLUMBIA: Washington, Jan. 9. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

ILLINOIS: Chicago, Jan. 24-25. Sec., Dr. C. St. Clair Drake, Capitol Bldg., Springfield.

INDIANA: Indianapolis, Jan. 9-11. Sec., Dr. W. T. Gott, 120 State House, Indianapolis.

IOWA: Des Moines, Feb. 6-8. Sec., Dr. G. H. Sumner, Capitol Bldg., Des Moines.

MINNESOTA: Minneapolis, Jan. 2-5. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

NEW MEXICO: Santa Fe, Jan. 8. Sec., Dr. W. E. Kaser, East Las Vegas.

NEW YORK: New York City, Albany, Syracuse, and Buffalo, Jan. 29-Feb. 2. Chief, Examinations Division, H. H. Horner, University of the State of New York, Albany, N. Y.

NORTH DAKOTA: Grand Forks, Jan. 1. Sec., Dr. G. M. Williamson, Grand Forks.

OKLAHOMA: Oklahoma City, Jan. 9-10. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

OREGON: Portland, Jan. 2. Sec., Dr. Herbert S. Nichols, 802 Corbett Bldg., Portland.

PENNSYLVANIA: Philadelphia, Jan. 9-11. Sec., Nathan C. Schaeffer, Capitol Bldg., Harrisburg.

RHODE ISLAND: Providence, Jan. 4-5. Sec., Dr. G. T. Swarts, State House, Providence.

SOUTH DAKOTA: Pierre, Jan. 10. Sec., Dr. P. B. Jenkins, Wauhay.

WASHINGTON: Spokane, Jan. 2. Sec., Dr. C. N. Suttner, Baker Bldg., Walla Walla.

WISCONSIN: Madison, Jan. 9-11. Sec., Dr. John M. Dodd, 220 E. 2d St., Ashland.

Alaska July Report

Dr. Henry C. DeVighne, secretary of the Alaska Board of Medical Examiners, reports the written examination held at Juneau and Seward, July 5-6, 1916. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 9, of whom 8 passed and 1 failed. A graduate of the Woman's Medical College of Pennsylvania in 1909, who was examined in January, was also granted a license. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Rush Medical College	(1902)	88
College of Physicians and Surgeons, Chicago	(1902)	78
Johns Hopkins University	(1911)	80
Maryland Medical College	(1904)	75
Columbia University, College of Physicians and Surgeons	(1894) 88.2; (1908) 76; (1913)	90
Syracuse University	(1900)	75.5
FAILED		
Georgetown University	(1906)	68

West Virginia July Report

Dr. S. L. Jepson, Health Commissioner of the West Virginia Public Health Council, reports the oral, practical and written examination held at Clarksburg, July 11, 1916. The total number of subjects examined in was 10; the total number of questions asked, 100; percentage required to pass, 80. The total number of candidates examined was 49, of whom 48 passed, including 1 osteopath, and 1 failed. One candidate was granted a reregistration license by examination, and 25 candidates were licensed through reciprocity. The following colleges were represented.

College	Year Grad.	Per Cent.
PASSED		
Atlanta Medical College	(1915)	84.2
Bennett Medical College	(1915)	80.9
Chicago College of Medicine and Surgery (1916) 88.1, 88.4, 89.1, 90.1, 90.2, 90.4.		
Loyola University	(1916) 82.4, 87.2	
University of Louisville	(1914) 86.2; (1916) 86.2, 86.9, 93.2	
Baltimore Medical College	(1913)	84.6
College of Physicians and Surgeons, Baltimore (1914) 90.3; (1915) 83.3, 86.9, 88.3, 91.7.		
University of Maryland (1915) 88.5; (1916) 81.4, 85.8, 87, 89, 89.6, 90.5.		
Eclectic Medical College	(1916)	87.5
Ohio State University	(1916) 86.6,	89.1
Western Reserve University	(1915)	89.1
Jefferson Medical College of Philadelphia (1910) 90.5; (1914) 86.5; (1916) 88.4, 89, 89.2.		
University of Pennsylvania	(1915)	87.6
Meharry Medical College	(1912)	82.4
Medical College of Virginia (1914) 85.4, 87.5; (1915) 86.6, 87.1, 87.3, 92.5; (1916) 84.6, 84.9, 88.8.		
FAILED		
North Carolina Medical	(1915)	77.8

College	Year Grad.	Reciprocity with
LICENSED THROUGH RECIPROCITY		
Southern Medical College	(1895)	Georgia
Kentucky University	(1906)	Penna.
Louisville Medical College	(1895)	Ohio
University of Louisville	(1912) Virginia; (1912)	Tennessee
	(1915)	Kentucky
Tulane University of Louisiana	(1913)	Mississippi
Baltimore Medical College	(1907)	Virginia
College of Physicians and Surgeons, Baltimore	(1914)	* Kentucky
Johns Hopkins University	(1913)	Maryland
Maryland Medical College	(1904)	Maryland
Eclectic Medical College	(1904)	Kentucky
Starling Medical College	(1906)	Ohio
Jefferson Medical College of Philadelphia	(1907)	Penna.
	(1908)	Virginia
University of Pennsylvania	(1901) (1906)	Penna.
Medical College of the State of South Carolina	(1914)	S. Carolina
Tennessee Medical College	(1903)	Tennessee
University of Tennessee	(1889)	Kentucky
Vanderbilt University	(1914)	Tennessee
Medical College of Virginia	(1909) (1913) (1914)	Virginia
National University, Athens	(1895)	Florida

Higher Preliminary Education

The New York Board of Regents has announced that, beginning Jan. 1, 1917, the minimum requirement of preliminary education in that state will be increased to one year of college work including courses in physics, chemistry and biology. For several years the sciences named have been required, but high school credits were accepted. The new ruling requires that they must be of college grade. This is the thirty-fourth state in which the licensing board has adopted one or two years of college work as the minimum requirement of preliminary education. The complete list of states, the number of years required and the dates when the requirement affects matriculants and graduates in medicine are as follows:

State Examining Board of	Number of Years Required	* Affects Students Matriculating	Affects All Graduates
Requiring Two Years:			
Alabama	2	1915-16	1919
Arizona	2	1918-19	1922
Colorado	2	1910-11	1914
Indiana	2	1911-12	1915
Iowa	2	1911-12	1915
Louisiana	2	1918-19	1922
Maryland	2	1918-19	1923
Minnesota	2	1908-09	1912
New Hampshire	2	1915-16	1919
New Jersey	2	1917-18	1921
New Mexico	2	1918-19	1922
North Dakota	2	1908-09	1912
Oklahoma	2	1917-18	1921
Rhode Island	2	1918-19	1922
South Dakota	2	1911-12	1915
Virginia	2	1917-18	1921
Washington	2	1918-19	1922
Wisconsin	2	1915-16	1919
Requiring One Year:			
Arizona*	1	1914-15	1918
Arkansas	1	1915-16	1919
California	1	1915-16	1919
Connecticut	1	1910-11	1914
Illinois	1	1915-16	1919
Indiana*	1	1910-11	1914
Kansas	1	1910-11	1914
Kentucky	1	1914-15	1918
Louisiana*	1	1915-16	1919
Maryland*	1	1914-15	1918
Michigan	1	1914-15	1918
Mississippi	1	1915-16	1919
New Hampshire*	1	1914-15	1918
New Jersey*	1	1916-17	1920
New York	1	1917-18	1921
North Carolina	1	1914-15	1918
Oklahoma*	1	1914-15	1918
Pennsylvania	1	1914-15	1918
Rhode Island*	1	1914-15	1918
Tennessee	1	1915-16	1919
Texas	1	1914-15	1918
Utah	1	1913-14	1917
Vermont	1	1913-14	1917
Virginia*	1	1914-15	1918
Washington*	1	1914-15	1918
West Virginia	1	1917-18	1921

* The 2-year requirement becomes effective at a later date.

Social Medicine, Medical Economics and Miscellany

The Convalescent Problem

The present trend toward socialization of medical practice finds an interesting concomitant in the trend toward hospitalization of the sick public. The latter, in turn, follows a closer acquaintance with the hospital on the part of the people, and extending recognition of its service to them, and especially on a reorganization of the hospital administration, equipment, staff and ideals. Internally the hospital has been put on an efficient basis. As a result, new and external lines of development have arisen, such is the care of convalescent and posthospital patients. The old style convalescent home does not meet the need. The new convalescent field has recently been outlined by Frederic Brush, superintendent of the Burke Foundation in New York (*Modern Hospital*, June, 1916, p. 393). He names six groups of convalescent institutions which should find legitimate place in posthospital care. Among these are the old type of convalescent home, which ministers to a small and limited clientele; larger institutions bordering on the sanatorium type, with nursing and medical service, classification of patients, and equipment for physical therapy, recreation, occupational training, etc., and country branch hospitals located from 4 to 12 miles from the city hospital, on spacious grounds, with provision for cheaper accommodation of earlier transferred patients, as well as supplying usual hospital service to the immediate neighborhood.

Another class comprises small pay convalescent homes, for which Brush finds there is a definite demand. An important group consists of the development and proper control of home convalescence under the supervision of the social service department, or at least in the fullest cooperation with it. He notes special advantages for this group in the matter of low cost compared to institutional convalescence, continuity of service to patient, preservation and education of the home, and finally in that it meets the need of probably 60 to 80 per cent. of convalescents who cannot afford any institutional care. The final group is concerned with convalescence within the hospital, with a specialized use of balconies, grounds, outdoor camps, libraries and similar accessories.

Brush then takes up the question as to what constitutes the convalescent field. In the New York district, there are seven types of cases properly coming under the jurisdiction of convalescent institutions. In a broad view he includes surgical dressing cases, as wounds heal more readily under the new environment, and motor transportation makes early transfer easy and safe. The recent development in New York of a trade school for cardiacs brings to attention another large group whose members require posthospital care, who need instead of the hospital an occasional rest to prevent decompensation, or who because of youth offer nearly a virgin field for preventive therapeutics. At present there is no adequate provision for men convalescents, especially those whose return to self-supporting work can be accelerated and who otherwise would have no place to go for recuperation. Rheumatism and the arthritides supply another large group. Tuberculosis, especially of the bones, skin, glands, joints and kidneys, requires such facilities, even if in practice pulmonary tuberculosis should be excluded.

Of unusual importance is the application of the new convalescent methods in mental cases, especially borderline and observation cases. Success here will depend on occupational facilities, and these in turn on sufficient sales outlets for the products. The adolescent convalescent is properly put in a separate classification, and in New York and some other sections a separate class is necessary for the colored people. The last and most strategic classification is called by Brush "preventive convalescence," and means opportunities for health-building periods in suitable institutions, chiefly for those in cities who by such periods can have their economic efficiency maintained and increased, and who will thus be better enabled to avoid acute illness and physical or mental breakdown.

In a further discussion of this problem (*Modern Hospital*, November, 1916, p. 367) Dr. Brush describes the methods of the Burke Foundation at White Plains, N. Y. Strong emphasis is placed on an atmosphere of "self-help, self-respect, self-mastery and the urge to normal life." Every possible means is employed to avoid the danger of convalescence leading to a chronic neurasthenic, hypochondriacal, self-centered individuality. While medical supervision and nursing are fully adequate, a democratic spirit is encouraged by a noticeable lack of special dietetic or physical therapy. The strong impetus is toward a common normal standard of life in which each convalescent plays an aggressive rather than a passive rôle. Results are the gage of efficiency, and Brush measures the results in terms of quicker and more complete recovery from acute illness, and the increased economic and personal efficiency of such groups as cardiacs, borderline mental cases, selected arthritides, choreics, protracted surgical dressing cases, patients with hyperthyroidism or nonpulmonary tuberculosis, and others.

Such exact delineation of the convalescent field as a modern extension of the hospital meets a large need, and should prove no small factor in the general improvement of public health and the further development of preventive medicine.

Pension Systems for Employees

At the meeting of the National Municipal League with a number of affiliated social organizations at Springfield, Mass., in November, Lawson Purdy, president of the New York City Department of Taxes and Assessments, discussed the question of employees' pensions and presented an outline of a plan proposed by him. He indicated that the plan might be extended beyond the ranks of city employees, and called attention to the burden of present pension plans in Europe. He said that in France the proportion of the active pay roll paid in pensions is 17 per cent., in Austria 33 per cent. and in Berlin, 37 per cent. Purdy's plan provides for the creation of a capital fund from contributions of employees which shall never be spent, but constantly increased. When the employee reaches the age of 70 he is entitled to retire and draw a pension, which would be made up of the earnings of his own contributions, the share of the earnings of persons of the same age who had died before him, and a per capita share, along with other pensioners, of the income of the general endowment which would be created by the death of all persons of a year-class. With a reasonable contribution, after the plan had been in operation some time it would be expected that the annual increase would pay not only pensions, but the annual contributions as well.

Medical Service in Health Insurance

The American Association for Labor Legislation has just issued a pamphlet[1] containing a plan for medical services in health insurance which has been endorsed by the Council of the Medical Society of the State of New York. It provides for the separation of the functions of certification and treatment, and for the representation of the medical profession in administration. Under the proposed plan, the physician who treats patients insured under health insurance will not be obliged to say whether or not his patients are eligible for cash benefit and thereby run the risk of incurring the displeasure of those who may have an unwarranted desire to be on the sick list. Instead, this duty is placed on a whole time medical officer who is engaged for this special work and who is not permitted to engage in practice under the act. This avoids the difficult position in which both German and British physicians are placed, of being at the same time the medical advisor of insured persons and an examiner for the funds. To assure the appointment of high grade men as medical officers by the local funds, the bill provides that the medical advisory board, elected by the state medical societies, shall

1. Copies of this pamphlet containing the provisions of special interest to physicians may be had by writing to the American Association for Labor Legislation, 131 East 23d Street, New York City.

establish the qualifications of local medical officers and that the local medical committee shall have power to veto undesirable appointments. This method avoids certain disadvantages of a civil service examination and assures that the medical officer is selected because of the confidence placed in him by physicians with whom he will be associated.

The representation of the medical profession is secured through the state commission of three members appointed by the governor, one of whom shall be a physician, and through the state medical advisory committee of eleven, composed of the commissioner of health, ex officio, and ten members elected by the state medical societies. To this board all regulations affecting medical benefit shall be referred before adoption by the state commission. Any disputes involving medical benefit which come before the commission on appeal shall be heard by the board before the commission makes its decision. Local representation is provided through local medical committees composed of elected representatives of panel doctors, the attending physicians and surgeons of local hospitals and a delegate from the health department. This committee will pass on the appointment of medical officers and will hear any disputes involving physicians. Disputes not settled by the committee are appealed to an arbitration committee consisting of a representative of the fund, of physicians and of an impartial chairman.

These medical provisions have been submitted to the Council of the Medical Society of the State of New York which body decided that "these essentials safeguard the public interest, the public health and the welfare of the medical profession" and by resolution approved and endorsed them, instructing the Committee on Medical Economics and the Committee on Legislation to act accordingly. They are corporated in the latest draft of the model bill of the American Association for Labor Legislation and are submitted to physicians for criticism.

The Quantitative Determination of Morphin in the Various Organs After Injection into Cats and Rabbits

In the nontolerant individual, morphin is largely excreted in the feces, regardless of the method of ingestion, only a small fraction being oxidized in the tissues. In tolerants, larger quantities are oxidized and a considerable portion enters into loose combination with certain of the tissues, so that the poison is retained in the body for some time. Homberger and Munch (*Jour. Am. Chem. Soc.*, 1916, xxviii, 1873) injected known quantities of morphin sulphate in aqueous solution into the mesenteric circulation of cats and rabbits and, after three hours, the animals were chloroformed and (in some cases) embalmed by arterial injection of a formaldehyd embalming fluid. Analyses of the kidneys, liver, spleen, stomach and urine were separately made, at once and after two, four, six, eight and twelve weeks' burial. The tissues surrounding the organs contained no alkaloid. The authors conclude that soon after the injection a portion of the morphin combines with some cell constituent, which compound is relatively more resistant to decomposition than is the organically uncombined morphin. Decomposition of the organ produces chemical compounds which break up the uncombined alkaloid but which do not at once appreciably affect the organically combined alkaloid. This decomposition and removal of morphin constitutes a "preliminary drop" in the morphin content, after which for a time the morphin content remains practically constant. A "secondary drop" then results in which the organically combined morphin is destroyed gradually or is no longer recoverable, so that after twelve weeks' burial only 23 per cent. is obtainable. If the analysis is started very soon after death, by means of a five-hour extraction, and three extractions with ether in both acid and sodium hydroxid solution, Autenrieth's modification of the Stas-Otto process is capable of yielding 97.5 per cent. of the morphin injected into an animal. The presence of formaldehyd as embalming fluid has no appreciable effect on the extraction results and seems to have no effect on the preliminary disappearance of the alkaloid, but the secondary decomposition is greatly retarded by embalming.

Medicolegal

Advising Unnecessary Operation — Mistreating Postoperative Insanity — Giving False Assurances

(*Fouzette vs. Grim et al.* (Mo.), *186 S. W. R. 1177*)

The Kansas City Court of Appeals reverses a judgment for $1,000 which was rendered for the plaintiff, against the defendants, two physicians and surgeons who conducted a hospital. The plaintiff, a married woman who was pregnant, was taken suddenly ill with a severe pain in the region of the right ovary. It was charged that the defendants negligently diagnosed the trouble as acute appendicitis and advised an operation therefor, which was not necessary and resulted in an abortion, etc. The court says that there was no evidence that the defendants were incompetent or unskilful surgeons, nor was there any claim that the operation itself was not performed in a skilful and proper manner. The charge was that the defendants negligently advised an operation. In this kind of a case the plaintiff must not only prove that the operation was unnecessary but also that the operation was one so palpably unnecessary that a surgeon of ordinary care and skill would not have advised it. If conditions were such as to lead surgeons of ordinary care and skill to think an operation was necessary, and the defendants, in the honest exercise of their best judgment, thought an operation was proper, then the defendants would not be liable even if it turned out afterward that they were mistaken in their diagnosis. The burden was on the plaintiff to establish the negligence charged. Hence it devolved on her to show that the operation which she said the defendants negligently advised was one which surgeons of ordinary care and skill in the honest exercise of their best judgment would not have advised. She failed to do this, and was not entitled to go to the jury on the question whether the defendants were negligent in advising an operation.

But, while there was evidence on the defendants' part tending to justify the removal of the plaintiff from the hospital, the court thinks there was sufficient evidence to take to the jury the charge that the defendants negligently directed the removal, whereby the plaintiff was rendered violently insane. The evidence clearly showed that on a certain date the plaintiff began to manifest symptoms of postoperative insanity and that the defendants immediately telephoned to her stepfather to come and get her, as she was well and ready to go; that they did not inform her relatives that she had postoperative insanity or advise them of the necessity for keeping her quiet in order to prevent it developing into the violent type; there was also evidence that they hastened the departure of the plaintiff from the hospital, insisting on her being taken the evening of the day her friends arrived to get her; that her pulse and temperature at the time she left, as shown by the defendants' own charts, showed that she was not in a condition to be taken away; that the excitement of the trip on the train caused her to become violently insane and to remain so for a long period of time. The court is of the opinion that the plaintiff introduced substantial evidence to show a negligent disregard of duty in sending the patient away under the circumstances.

In overruling a motion for a rehearing, the court says that it had not overlooked the fact that the plaintiff testified that the defendants assured her the operation would not affect her pregnancy. Perhaps such false assurance that the operation would have no effect on pregnancy might be a circumstance to be taken into consideration along with other facts, in determining whether or not the operation was negligently advised; and therefore the fact of such false assurance would not be inadmissible under a charge of negligent advice in regard to an operation. But such false representation or assurance, alone and of itself, would not be sufficient to establish the charge that the operation was unnecessary, and so palpably unnecessary that a reasonably skilful and prudent surgeon would not have advised it. An operation might be imperatively necessary, and yet, for various reasons, a patient might not be told the truth as to an incidental or auxiliary

effect thereof. But if a surgeon should obtain a patient's consent to an operation by a false and fraudulent representation, the surgeon might be liable on that cause of action. In such a case he would perhaps be liable to an action for deceit.

Privileged Information

(Wesseler vs. Great Northern Railway Co. (Wash.), 157 Pac. R. 461)

The Supreme Court of Washington, in denying a petition by the defendant for a rehearing, says that the defendant invoked a ruling on the lower court's excluding questions to its witness, the plaintiff's physician, after what the supreme court deems objections by the plaintiff both seasonable and proper. The Washington statute says that a physician shall not testify without the patient's consent, or be examined "as to any information acquired in attending such patient which was necessary to enable him to prescribe or act for the patient." This physician on his visit expected to prescribe, but the defendant asked him whether the plaintiff was up and dressed, whether he was moving about, whether he was staggering, walking in a hesitating manner, reeling, or showing any signs of nausea or dizziness. The defendant would justify these because: First, he was not asked to quote the patient; second, that while these symptoms might be observed for prescribing, it would be for the plaintiff to show that they were the basis of that; and, third, that the plaintiff had previously related that he took from this physician a draft of medicine which put him asleep. As to the first, it is not simply information gained through the patient's mouth that the statute excludes, but information "acquired in attending," not merely told or overheard. As to the second, the burden of justification plainly should be on the defense. As to the third, all that the plaintiff had said was that he had taken the draft from him and had fallen asleep after a headache. This was no attempt to describe the physician's treatment or theory of the disease, or to quote a physician while shutting his mouth. The supreme court passed these arguments because it deemed them quite without merit.

Illegal Treatment by Alleged Prayer with a Laying on of Hands

(State vs. Pratt (Wash.), 158 Pac. R. 981)

The Supreme Court of Washington affirms a conviction of the defendant of the crime of practicing medicine without a license. The court says that he maintained a place known as the "Progressive Healing Institute," and had previously treated the sick and afflicted by a system or method which he called "Suggestive Therapeutics." His method of treatment was described in the case of *State* vs. *Pratt*, 80 Wash. 96, 141 Pac. R. 318, as a laying on of the hands on that part "of the body where the trouble is . . . . on certain parts of the spine that controls . . . nerves or the nerves that control the organ," and by the giving of certain suggestions which go from the mind of the operator to the mind of the patient so that the mind of the patient will control his body, and a cure be thus effected. It was further shown in this case that the complaining witness went to the office of the defendant seeking, or pretending to seek, treatment for one Augerson, who accompanied him, and who declared to the defendant that he was suffering from a private disease. The defendant made a physical examination and diagnosis confirming the opinion or pretended opinion of Augerson, and thereupon, after assurance that he treated by prayer only, treated his patient by the same physical methods and in the same manner as described in the former case. The defendant contended that his treatment fell within the proviso of the statute; that he treated diseases, and did so in this case, only by prayer. He further contended that he made no charges, and testified: "People who come in here, the majority, are used to paying $1 a treatment, or some $5 for six treatments, and then we don't get any more from them for a week." After the treatment had been concluded, he gave the patient some advice as to diet. While the court is not disposed to define either a form of prayer or an essential posture for those who invoke it (see "The Prayer of Cyrus Brown," by Walter Foss), and while prayer, accompanied by the laying on of the hands, finds ample warrant and justification in the "Holy Writings," the court cannot escape the conclusion that the defendant had done no more than make a superficial adjustment of his practice so as to avoid the effect of the former adjudication against his methods. He attempted to distinguish the cases, but they were essentially the same. It might be contended with reason that this was a stronger case against him, for the testimony of the witness who was treated was that, after the warmth of the hands of the defendant had become noticeable, they were moved to another place on his body, thus indicating that the defendant's faith was not entirely without questioning, or above the aid of physical manipulation, which is sometimes quite as efficient in promoting circulation and health as are the prayers of the faithful. The only distinction that the court can see between this case and the other one is that the defendant had renamed his method of suggestion. Formerly he conveyed his own suggestion of mind through his hand to the mind of the patient, and the patient cured himself, or believed that he was healed. Now he would, by the employment of the same methods, invoke the will of the Supreme Being as a direct curative force. There had been no change in the defendant's methods, either in form or in substance.

Illegal Practice by Teacher of Chiropractic

(People vs. Oakley (Calif.), 158 Pac. R. 585)

The District Court of Appeal of California, Second District, affirms a judgment of conviction of the defendant of having practiced a system and mode of treating the sick and afflicted without possessing a certificate issued by the state board of medical examiners entitling him so to do. The court says that, while the defendant's practice, as shown, was as a teacher and demonstrator of the chiropractic system before a class in a chiropractic school, the subjects of such demonstration being the sick and afflicted who at his hands sought and received treatment free of charge, such fact did not exempt him from the operation of the law.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Orthopedic Surgery, Boston

December, XIV, No. 12

1 Conservative Treatment of Congenital Club Foot. E. W. Fiske, Pittsburgh.—p. 693.
2 *Direct Neurotization of Paralyzed Muscles; Direct Nerve Implantation. A. Steindler, Iowa City, Iowa.—p. 707.
3 *Influence of Os Calcis on Production and Correction of Valgus Deformities of Foot. P. W. Roberts, New York.—p. 720.
4 Scoliosis; Etiology and Treatment. F. E. Peckham, Providence.—p. 725.
5 Case of Spinal Cord Tumor. W. W. Plummer, Buffalo.—p. 734.

2. **Direct Neurotization of Paralyzed Muscles.**—Steindler believes that direct neurotization is possible. The natural limits of physiologic regeneration allow a motor nerve, directly implanted into paralyzed muscle tissue, to establish by regeneration the entire chain of neuromotor connections. From his experiments on dogs, using the anterior crural and sciatic nerves, it appears that this regeneration becomes complete in from eight to ten weeks after the implantation. In close succession to the regeneration of nerve tissue, the muscle tissue also regenerates, and this becomes manifest in the reappearance of the normal contours of the fibers and the normal striations. Physiologic test of the reneurotized muscles also shows that regeneration of the muscle takes place centrifugally from the point of implantation. In none of the experiments could Steindler observe in a normal muscle any inclination to take on additional nerve supply, though ample occasion was furnished to this effect. For this reason he is inclined to be rather skeptical in regard to the question of hyperneurotization. Apparently totally paralyzed muscles in infantile paralysis were regularly found to contain a variable number of perfectly normal muscle fibers and a considerable amount of nervous elements. The finding of considerable

amount of healthy muscle tissue in muscles which had been paralyzed for years offers a strong possibility for the clinical application of this principle. Investigations in this direction are under way.

3. **Influence of Os Calcis on Valgus Deformities.**—It is urged by Roberts that the influence of the os calcis on lateral deformities of the foot is deserving of more consideration than it has heretofore received, for through control of this bone much may be accomplished in the prevention and correction of malpositions and in the relief of symptoms which so frequently ensue.

Annals of Ophthalmology, St. Louis

October, XXV, No. 4

6 Intimate Relation Between Eye and Ear, Nose and Throat: Report of Some Unusual Cases. J. C. Beck, Chicago.—p. 659.
7 Case of Pituitary Body Disease with Reference to Effects of Early Operation. W. E. Bruner, Cleveland.—p. 692.
8 Unusually Large Osteoma of Frontal, Ethmoidal and Sphenoidal Sinuses Involving Orbit and Anterior Cerebral Fossa, Presenting No Subjective Symptoms Other than Proptosis of Eyeball. C. A. Veasey, Spokane, Wash.—p. 699.
9 Hereditary Posterior Polar Cataract; Report of Pedigree, S. L. Ziegler and J. M. Griscom, Philadelphia.—p. 704.
10 Extraction of Cataracts in Capsule by Slight Modification of von Graefe Method. E. Torok, New York.—p. 712.
11 Ambulant After-Treatment of Cataract Extraction; with Post-operative Delirium and on Striped Keratitis. H. D. Bruns, New Orleans.—p. 718.
12 Hand Magnet of Inner Pole Type. H. S. Gradle, Chicago.—p. 724.
13 Case of Glaucoma Following Use of Atropin, with Unusual Complications. T. Y. Sutphen, Newark, N. J.—p. 730.
14 High Hyperopia from Clinician's Standpoint. H. F. Hansell, Philadelphia.—p. 734.
15 Blind Spot. H. S. Gradle, Chicago.—p. 740.

Annals of Otology, Rhinology and Laryngology, St. Louis

September, XXV, No. 3

16 Diagnosis and Management of Vasomotor Disturbances of Upper Air Passages. J. L. Goodale, Boston.—p. 527.
17 Anatomic Relations of Cavernous Sinus to Other Structures, with Consideration of Various Pathologic Processes by Which It May Become Involved. H. G. Langworthy, Dubuque, Iowa.—p. 554.
18 Case of Vagotonia, Apparently Originating in Nasal Accessory Sinuses. G. Fetterolf, Philadelphia.—p. 587.
19 Case of Septic Thrombosis of Jugular Bulb, with Repeated Formation of Septic Thrombi in Sigmoid and Lateral Sinuses. Reference to Literature on Involvement of Torcular Herophili in Such Cases. J. R. Page, New York.—p. 595.
20 Malaria Simulating Diseases of Mastoid and Frontal Sinus. C. W. Richardson, Washington.—p. 602.
21 Innervation of Nasal Chambers. A. P. Brubaker, Philadelphia.—p. 607.
22 Relation of Diseases of Accessory Sinuses to Diseases of Eye, Especially in Children; Report of Two Cases. J. H. Bryan, Washington, D. C.—p. 618.
23 Two Cases of Chronic Pansinuitis Associated with Systemic Infection. G. E. Shambaugh, Chicago.—p. 625.
24 Report of Two Severe Cases of Ulceromembranous Angina. I. Frank, Chicago.—p. 631.
25 Ear Affections and Diabetes. C. Zimmermann, Milwaukee.—p. 637.
26 Esophagotracheal Fistula. R. Levy, Denver.—p. 649.
27 Epidemic of Severe Form of Acute Infection of Throat, with Abscess Formation; Report of Fifty-Eight Operations. C. F. Theisen, Albany.—p. 661.
28 Acute Mastoiditis with Unusual Symptoms Indicative of Intracranial Involvement, Operation; Recovery. E. B. Dench, New York.—p. 672.
29 Oral Cavity in Relation to Ear, Nose and Throat. T. E. Carmody, Denver.—p. 676.
30 Adenoma of Palate. G. B. New, Rochester, Minn.—p. 687.
31 Surgical Anatomy of Frontal Sinus; Anatomic Preparations. G. E. Shambaugh, Chicago.—p. 701.
32 Case of Acute Mastoiditis with Influenzal Meningitis. Treatment by Operation on Mastoid and Anti-Influenzal Serum, Followed by Brain Abscess, Operation; Recovery. F. R. Packard, Philadelphia.—p. 706.
33 Suppuration of Accessory Nasal Sinuses as Possible Etiologic Factor in Multiple Sclerosis. H. H. Stark, El Paso, Texas.—p. 710.

Bulletin of Johns Hopkins Hospital, Baltimore

December, XXVII, No. 310

34 *Nonprotein Nitrogen and Urea in Maternal and Fetal Blood at Time of Birth. J. M. Slemons and W. H. Morriss, New Haven, Conn.—p. 343.
35 *Types of Lesion in Chronic Passive Congestion of Liver. R. A. Lambert and B. R. Allison, New York.—p. 350.
36 *Reaction of Spleen in Acute Infections. F. A. Evans, Baltimore.—p. 356.
37 Iron Impregnation and Incrustation of Various Tissues. O. Klotz, Pittsburgh.—p. 363.

34. **Nonprotein Nitrogen and Urea in Maternal and Fetal Blood.**—As nearly as possible the specimens examined by Slemons and Morriss were obtained simultaneously at the end of the second stage of labor. The fetal blood was collected from the placental end of the severed umbilical cord which bled into a sterile flask; the maternal blood was aspirated from a vein in the mother's forearm. In thirty-five normal obstetric patients at the time of birth the average rest nitrogen in the maternal blood was 25.2 mg. per 100 c.c. (extremes 18.5 to 33.5 mg.); in the fetal blood the average was 24.9 mg. (extremes 19 to 34.2 mg.). In sixteen normal patients the average quantity of urea nitrogen in the maternal blood was 10.5 mg. per 100 c.c. (extremes 8.4 to 14 mg.); in the fetal blood the average was 10.4 mg. (extremes 7.9 to 13.5 mg.). The urea nitrogen represented 44 per cent. of the rest nitrogen in the maternal and 45 per cent. in the fetal blood. The same concentration of urea in both circulations indicates that this substance passes through the placenta by diffusion. Complications accompanied by an increase of urea in the maternal blood—toxemias of pregnancy, syphilis, decompensated heart lesions, and others—are also attended with a corresponding increase in the fetal blood urea. Pathologic cases thus confirm the conclusion that urea diffuses through the placenta. The administration of chloroform during pregnancy causes alterations first in the fetal and later in the maternal blood. Primarily the fetal blood urea is increased. Prolonged anesthesia causes a moderate increase in the rest nitrogen of both circulations. Asphyxia dependent on impairment of the fetal heart action is attended with a notable increase in the urea of the fetal blood. In cases of still birth this generally represents 60 to 85 per cent. of the rest nitrogen.

35. **Chronic Passive Congestion of Liver.**—One hundred and twelve cases of well marked chronic passive congestion were studied by Lambert and Allison. Five types of lesion were recognized: (*a*) capillary dilatation with atrophy of the cells toward the center of the lobule; (*b*) central degeneration with or without capillary dilatation; (*c*) marked fat accumulation in the cells about the hepatic veins with midzonal hyperemia; (*d*) central necrosis with hemorrhage; (*e*) collapse fibrosis. The type of lesion present at necropsy is determined chiefly by the degree of circulatory disturbance and its duration. Long continued stasis of slight or moderate grade leads to capillary dilatation with progressive atrophy of the liver cells (Type 1). Degenerative changes in the liver cells (Type 2) are due either to stasis of more marked degree, or to moderate congestion in conjunction with infection. Extreme stasis results in central necrosis with hemorrhage (Type 4), which passes over into collapse fibrosis (Type 5) if death be delayed long enough. The latter lesion also results occasionally from an extreme degree of atrophy (Type 1). Central fat accumulation with hyperemia of the intermediate zone is commonly associated with chronic rheumatic endocarditis in young individuals.

The authors believe that the necrosis of the liver cells in chronic passive congestion is the effect of stasis alone, leading to asphyxia of the cells farthest removed from their arterial blood supply. Infection plays a minor part in causing a definite necrosis, although it probably contributes to the production of degenerative changes in the liver cells (Type 2). Very extensive necrosis is not infrequently seen in cases of extreme stasis unassociated with infection. Active regeneration of liver tissue is not regularly seen in chronic passive congestion. It is conspicuously absent in those cases of hemorrhagic necrosis where the loss of liver tissue is greatest. It is observed most often in cases of circulatory disturbance of long standing. Chronic passive congestion never leads to the development of cirrhosis of the usual portal or nodular type. Collapse fibrosis, not infrequently seen, is not a true cirrhosis, but a condensation of

the reticular fibers where the liver cells have disappeared. In only two out of the 112 cases of chronic passive congestion was an active new growth of connective tissue observed. In these the change was limited to certain parts of the liver, with an involvement of the central portion of the lobule only, producing a picture very different from that of portal cirrhosis.

36. **Reaction of Spleen in Acute Infections.**—It has been Evans' object to interpret the histology of acute splenic tumor, as seen at necropsy, on the basis of what is already known of the cells in the spleen, and to control these interpretations by experimentally induced acute splenic tumor in animals under various conditions. This analysis brings further proof that a separation of the vitally staining histogenous macrophages and the endothelial cells from the other cells of the mature organism is justified functionally, although not always possible on morphologic grounds; and that the spleen is an integral part of the blood system of the body, responding quickly to any influence inhibiting or stimulating hematopoietic activity. In regard to the reaction of the spleen in the commoner acute infections, Evans says, that acute splenic tumors all fall into one or two major groups; the red type, associated with typhoid and closely related infections, and the gray type, with pneumococcus, staphylococcus, streptococcus and other infections. The spleen in each type of acute splenic tumor shows active congestion on the extent of which depends the size, consistence, and, in large part, the color of the organ. The histologic picture of red acute splenic tumor is distinctively characterized by hyperplasia and activity, as evidenced by phagocytosis of the reticulo-endothelial macrophages and decrease in number of the other cells of the pulp; and these changes are dependent on a toxic inhibition of the leukopoietic functions of the body associated with typhoid, and a stimulation, perhaps functional, of the reticular and endothelial cells. The histologic picture of gray acute splenic tumor is distinctively characterized by an increase in the pulp cells, especially the oxydase containing myeloid elements, without any proliferation, or increased activity, of the reticular and endothelial cells; and these changes result for the most part from a functional demand for leukocytes.

California State Journal of Medicine, San Francisco

December, XIV, No. 12

38 Principles and Problems of Industrial Accident Work. M. R. Gibbons, San Francisco.—p. 470.
39 *Streptococci Infections of Skin. E. D. Chipman, San Francisco.—p. 472.
40 Fibromyoma Uteri; Treatment, Operative and Otherwise, with Special Reference to Roentgen Ray Therapy. H. J. Kreutzmann, San Francisco.—p. 475.
41 Incipient Systemic Disturbances as Shown by Ocular Signs. E. W. Alexander, San Francisco.—p. 478.
42 Salvarsan and Neosalvarsan in Tropical Diseases. H. Gunn, San Francisco.—p. 481.
43 Report of Human Cases of Rabies in California. J. C. Geiger, Berkeley.—p. 482.
44 Recent Work in Epilepsy. E. W. Twitchell, Sacramento.—p. 483.
45 Roentgen Treatment of Localized Pyogenic Infections; Report of Eight Cases. H. E. Ruggles, San Francisco.—p. 486.
46 Blindness Following Injuries to Back of Head. L. Newmark, San Francisco.—p. 487.
47 Two Freak Accidents During Tonsillectomies. H. S. Moore, San Francisco.—p. 487.

39. **Streptococci Infections of Skin.**—Success in the treatment of superficial streptococcic dermatoses, Chipman says, lies not in the application of the chosen medicament alone. In crusted, impetiginous lesions the keynote to efficient treatment is found in the thorough removal of all the crusts, thereby allowing the remedy access to the oozing surface. Unless this is done all attempts are predestined to fail. In those lesions where the process has extended by a circumferential vesicular lesion which has ruptured, leaving a sort of epidermal collarette, great pains must be taken to cut away the dead corneous layer, for otherwise a pocket is left in which the organisms flourish because the remedy does not reach them. Once the surface is properly cleared away of crusts or epidermal pockets the remedy of choice is white precipitate ointment or the Eau d'Alibour of common French use. White precipitate ointment in its official 10 per cent. strength will probably cure any case if properly applied. For infants and those of delicate skin 5 per cent. is probably better.

Eau d'Alibour is a combination which varies much in its published formulas. The most used for this purpose is as follows: copper sulphate, 2 parts; zinc sulphate, 3 parts; spts. camphor, 10 parts; aq. destil., q. s. ad 500 parts. After thorough preparation of the surface this is applied on tampons three or four times daily, the lesions being protected in the intervals with zinc ointment. For the infections of the retro-auricular fold, the nostrils, or perlèche, 5 per cent. of the tincture of iodin in 80 per cent. alcohol is recommended while in lesions affecting the inguinal folds the percentage of the tincture of iodin may be doubled.

Florida Medical Association Journal, Jacksonville

November, III, No. 5

48 Pyelography as Aid to Diagnosis of Certain Obscure Renal and Abdominal Conditions. H. A. Peyton and E. Jelks, Jacksonville.—p. 129.
49 Roentgen Diagnosis of Renal Calculus; Report of One Hundred and Twenty-Seven Examinations. L. W. Cunningham, Jacksonville.—p. 134.
50 Diagnosis and Treatment of Pellagra. M. L. Tisdale, Tampa.—p. 137.
51 Gunshot Wound of Abdomen with Multiple Perforations of Small Intestine and Mesentery. W. R. Warren and H. C. Galey, Key West.—p. 141.
52 Significance of Eye Symptoms in Relation to Systemic Diseases. S. F. Smith, Lakeland.—p. 142.
53 Eye-Strain; Its Diagnosis and Treatment. J. W. Taylor, Tampa.—p. 144.
54 Sagging Abdominal Viscera; Their Nonsurgical Treatment. G. M. Niles, Atlanta, Ga.—p. 146.
55 Complete Efficient Surgery. R. R. Kime, Lakeland.—p. 150.
56 Unrecognized Nasal Diphtheria. U. S. Bird, Tampa.—p. 153.

Journal-Lancet, Minneapolis

December 1, XXXVI, No. 23

57 Relations Between Emotions and Glands of Internal Secretion. W. B. Cannon, Boston.—p. 685.
58 *Large Quantities of Milk in Treatment of Disease. J. E. Crewe, Rochester.—p. 688.
59 Unrecognized Fractures of Wrist and Ankle Joints. V. J. LaRose, Bismarck, N. D.—p. 691.
60 Peritonitis in Children; Study of Its Pathologic Physiology. S. M. Hohf, Yankton, S. D.—p. 696.
61 Radium in Treatment of Lymphangioma of Tongue; Report of Case. G. B. New, Rochester, Minn.—p. 699.
62 Etiology of Acute Anginas. W. R. Murray, Minneapolis.—p. 701.
63 Surgical Aspects of Goiter. A. T. Mann, Minneapolis.—p. 703.
64 State Aid for Sanatoria for Tuberculosis. H. M. Bracken, Minneapolis.—p. 706.

58. **Milk in Treatment of Disease.**—Theoretically, milk is the most nearly perfect food. It contains all the elements necessary for the growth of tissue and the maintenance of the body. Chemically it resembles blood; and it is blood before it is milk. The secretory activity necessary for its assimilation is much less than for any other food. It appears to be an independent chemical excitant of the digestive canal. Milk makes more blood, and better blood, faster than any other substance; it is an excellent diuretic. It is good to cure disease, improve elimination, make better blood and more blood, feed the tissues, destroy invading bacteria, quickly remove bacterial and other toxic products, and build up the body resistance. About 3 to 3½ quarts of milk daily will sustain the average adult indefinitely under ordinary circumstances. If the patient can be made to assimilate from 3 to 5 quarts more, combined with complete rest and baths, Crewe says, we have a wide margin to go toward correcting the conditions causing disease.

There should be no ironclad rules; discretion must be used. As a rule Crewe begins the treatment by giving the patient large quantities of water and oranges, or orange juice, without other food, for one or two days. Following this the patient is confined strictly to bed, but is allowed to walk to the bathroom when necessary, unless this is contraindicated. In most instances the daily feeding begins with 3 or 4 quarts of milk, given half-hourly, thirty-two times a day, beginning at 6 a. m. and continuing half-hourly feedings until 9:30 p. m. A daily enema of soapy water or salt solution is important, because patients to whom it is not given

frequently have gas distention and nausea, and develop an aversion to the milk. In addition to the milk the patients are allowed a dish of prunes or orange juice daily. No other food or water is given. Increase the amount of milk given one quart every other day until the amount the patient can take is reached which in most cases is from 6 to 8 quarts. Crewe has had patients gain 20 pounds in two weeks on 8 quarts a day. To obtain the best results, whole raw milk must be given in large amounts combined with complete rest in bed and hot baths. Unless contraindicated each patient is given a hot bath daily, lasting from ten minutes to three-fourths of an hour, and then wrapped in a blanket to cause perspiration. During the past four years Crewe has treated 136 cases by this method, including cases of tuberculosis, arteriosclerosis, chronic rheumatism, chronic nephritis, gastric ulcer and diseases of the nervous system.

Medical Record, New York

December 9, XC, No. 24

65 Scope and Technic of Roentgen-Ray Therapy. I. Levin, New York.—p. 1015.
66 Worth of Early Roentgen Ray Examination in Gastric Cancer. G. M. Niles, Atlanta, Ga.—p. 1025.
67 Complete Transposition of Viscera; Report of Two Cases. H. J. Hartz, Philadelphia.—p. 1027.
68 Diversional Therapy in Mental Disease. L. F. Robinson, Raleigh, N. C.—p. 1028.
69 Nausea and Vomiting After Nitrous Oxid Oxygen Anesthesia. W. L. Soule, New York.—p. 1030.
70 Is Angina Rather than Tonsillitis Precursor of Acute Rheumatism? J. G. Drennan, Rosebank, Staten Island.—p. 1032.
71 Diagnosis of So-Called Sciatica. E. W. Bedford and E. O. Ravn, Chicago.—p. 1033.

Modern Hospital, St. Louis

December, VII, No. 6

72 First Units of New Buffalo City Hospital. Green and Wicks, Buffalo.—p. 447.
73 Four Years of Washington County (Iowa) Hospital. C. A. Boice, Washington, Iowa.—p. 456.
74 Edible Pastes—Macaroni, Spaghetti, Vermicelli, Noodles. J. P. Street, New Haven, Conn.—p. 463.
75 Plans for County Tuberculosis Hospital. W. H. Watterson and L. F. Sutton, Oak Forest, Ill.—p. 466.
76 What Dispensary Work Should Stand For. R. C. Cabot, Boston. —p. 467.
77 Lighting of Hospitals in Great Britain. S. F. Walker, Bath, England.—p. 469.
78 Care of Alcoholics in Modern Hospital. C. B. Towns, New York. —p. 473.
79 For Hospital Standardization. J. G. Bowman.—p. 481.
80 Hospital Accounting and Finances. A. R. Warner, Cleveland. —p. 482.

New York Medical Journal

December 9, CIV, No. 24

81 Gonorrhea Curable Scourge. G. A. Wyeth, New York.—p. 1125.
82 Hay Fever. W. Scheppegrell, New Orleans.—p. 1127.
83 Surgical Immunity. W. W. Babcock, Philadelphia.—p. 1132.
84 Psychopathology of Noise. A. A. Brill, New York.—p. 1134.
85 Profound Secondary Anemia Due to Ulcerated Internal Hemorrhoids; Report of Three Cases. J. F. Saphir, New York.—p. 1138.
86 Internal Hemorrhoids. A. A. Landsman, New York.—p. 1139.
87 Hard Water and Health. F. L. Rector, New York.—p. 1142.
88 Parenchymatous Glossitis; Report of Case. M. Lubman, New York.—p. 1146.

Ohio State Medical Journal, Columbus

December, XII, No. 12

89 Unfortunate Surgical Experiences. W. E. Ranz, Youngstown.—p. 791.
90 Why Is Early Tuberculosis So Often Not Recognized? C. O. Probst, Columbus.—p. 793.
91 Practical Value of Stereoroentgenograms of Mastoid. J. M. Ingersoll, Cleveland.—p. 796.
92 Foreign Bodies in Eye. W. E. Shackleton, Cleveland.—p. 798.
93 Vaccine Therapy in Gonorrhea. A. Ravogli. Cincinnati.—p. 800.
94 Pituitary Extract; Its Use and Abuse. A. J. Skeel, Cleveland.—p. 803.
95 Epilepsy. H. H. Drysdale, Cleveland.—p. 802.
96 Should State and Industrial Corporations Be Recipients of Charity Dispensed by Hospitals? H. Wright, Cleveland.—p. 804.

Ophthalmic Record, Chicago

December, XXV, No. 12

97 Congenital Glaucoma and Some Allied Conditions. R. H. Elliot, London.—p. 595.
98 Ocular Complications of Anterior Polimyelitis. W. C. Posey and W. C. Swindells, Philadelphia.—p. 609.
99 Spontaneous Explosion of Snellen Improved Artificial Eyes. A. S. Rochester, Chicago.—p. 614.
100 Case of Blepharochalasis—Variety of Dermatolysis. R. L. Randolph, Baltimore.—p. 616.
101 Facial Pigmented Nevus Involving Sclera. W. A. Pusey, Chicago. —p. 618.
102 Case of Congenital Suppurative Choroiditis with Microphthalmos. R. L. Randolph, Baltimore.—p. 619.
103 Anophthalmos. H. R. Wright, Columbus, Ohio.—p. 620.

Texas State Journal of Medicine, Fort Worth

December, XII, No. 8

104 Paratyphoid Infection. J. D. Whitam, U. S. Army.—p. 314.
105 Whole Time County Health Officer. P. W. Covington, Austin.—p. 317.
106 Medical Inspection of Schoolchildren. C. E. Durham, Hico.—p. 319.
107 Some Essentials in Management of Tuberculous Patients. C. M. Hendricks, El Paso.—p. 322.
108 Scope of Artificial Pneumothorax in Pulmonary Diseases. A. E. Greer, Houston.—p. 324.
109 Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. W. C. Farmer, San Antonio.—p. 326.
110 *Treatment of Asthma and Mixed Infection of Pulmonary Tuberculosis with Autogenous Vaccine. T. C. Terrell, Fort Worth. p. 330.
111 Vaccines in Respiratory Diseases. B. F. Stout, San Antonio.—p. 332.
112 Successful Excision of Spleen for Traumatic Rupture, Complicated by Traumatic Intestinal Paresis, Malaria and Hookworm. H. A. Barr and W. F. Thomson, Beaumont.—p. 334.

110. Asthma and Tuberculosis Treated with Autogenous Vaccine.—Three cases of pulmonary tuberculosis and one of asthma in which the use of autogenous vaccines was followed by favorable results are cited by Terrell. He says that in cases of this kind vaccines, when properly prepared and intelligently administered, together with the proper attention to rest and diet, result in great benefit to the patients. If patients are in an advanced stage before vaccine treatment is started it is needless to say that one cannot expect to obtain the wished for improvement. In cases of pulmonary tuberculosis it is not the tubercle bacilli, but the mixed infection that causes the rapid breaking down of the lung tissue and it is this mixed infection that is affected by autogenous vaccines. The method followed by the author is detailed.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

November, XXI, No. 6

1 Accurate Roentgenography of Pituitary Fossa and Sphenoidal Sinuses. H. T. George.—p. 169.
2 Simple, Rapid and Accurate Method for Localization of Foreign Bodies so as to Indicate to Surgeons Position of Patients when Roentgenographed. H. E. Gamlen.—p. 175.
3 Rotating Plate Changing Table. A. St. G. Caulfeild and R. Knox. —p. 177.
4 Report with Roentgenogram of Dislocated Lens. J. D. Morgan. —p. 181.
5 Case of Functional Dysphagia. T. L. Bunting.—p. 182.
6 Case of Diffuse Fibromyoma of Esophagus, Causing Dysphagia and Death. A. J. Hall.—p. 183.

British Journal of Children's Diseases, London

November, XIII, No. 155

7 Congenital Tuberculosis. F. P. Weber.—p. 321. To be continued.
8 Teeth in Rickets. J. L. Dick.—p. 332.
9 *Two Cases of Splenectomy for Splenic Anemia. W. F. Cholmeley. —p. 338.

9. Splenectomy for Splenic Anemia.—The two patients reported on by Cholmeley were children aged 6 and 12 years. The first had been ailing for about three years. The removal of the spleen gave no trouble. The day after the operation there were well marked evidences of improvement. Two days before operation, the red cells numbered 1,850,000; white cells, 6,500 per cm. Seventeen days after operation, red cells, 2,700,000; white cells, 11,500. Six weeks after operation, the red cells numbered 2,425,000; white cells, 15,600; hemoglobin, 70 per cent. The second patient had apparently been quite well, except for some slight paleness, until a week before

admission, when he had a bad fright. The blood count was: red cells, 1,330,000; white cells, 5,000; hemoglobin, 35 per cent. No difficulty was experienced in removing the spleen. Three days before operation a blood count was taken: red cells, 1,600,000; white cells, 11,000. A week after operation the blood count was: red cells, 2,900,000; white cells, 10,000; hemoglobin, 70 per cent.

British Medical Journal, London

December 2, II, No. 2918

10 Mechanism of Serum Reaction. H. R. Dean.—p. 749.
11 Five Cases of Labor Obstructed by Contraction Ring. C. White. —p. 752.
12 Life History of Ascaris Lumbricoides. F. H. Stewart.—p. 753.
13 Use of Filtered Roentgen Rays for Relief of Fibrous Bands and Adhesions Resulting from Bullet Wounds. A. W. Williams. —p. 754.
14 *Treatment of Wound Infection. J. O'Conor.—p. 755.
15 Acidosis in Children. A. C. Stark.—p. 756.
16 Case of Congenital Cystic Disease of Kidneys. T. Holmes.—p. 757.
17 Return to Work—Legal and Other Impediments. J. Collie.—p. 757.

14. Treatment of Wound Infection.—O'Conor strongly recommends that, when the general symptoms, as indicated by elevation of pulse and temperature and coated tongue, are combined with a foul discharging wound, ether should be administered, a tourniquet applied well above the lesion, and a few (four to six) incisions made into parts in which fluctuation or bogginess is indicated on digital palpation, always carrying one or two such incisions into or from the original wound. The edges of the wound are drawn apart with retractors and the field mopped dry with gauze sponges. A careful inspection is then made of the interior, while digital pressure is made all round the exterior of the wound; if any leaking into the cavity is observed, a closed forceps or director is pushed into the track, the secondary collection located and a direct incision made into it. The cardinal factor is the conversion of a septic cavity or cavities into one large open sore, and, in nine cases out of ten, if this be properly done, and followed by irrigation every four hours with hot "peroxid carbolic" lotions and hot fomentations, with absolute rest on a splint, the onset of repair is only a matter of hours, or at most a few days. When feasible, submersion in warm peroxid lotion, once or twice daily, is a useful adjunct. O'Conor's treatment of infected wounds consists of four hourly irrigations with hot peroxid solutions (2 ounces to liter), followed instantly by hot carbolic lotion (½ ounce to liter), and the application of hot mercuric chlorid fomentations (wrung dry).

Dublin Journal of Medical Science

November, CXLII, No. 539

18 Fractures and Fracture Dislocations. J. S. McArdle.—p. 289.
19 Heliotherapy in Tuberculosis of Bones and Joints. E. M. Hewitt, —p. 295.

Journal of Laryngology, Rhinology and Otology, London

November, XXXI, No. 11

20 Pathology of Otosclerosis. J. S. Fraser and R. Muir.—p. 465.
21 Influence of Position on Appearances of Normal Pharynx. D. Guthrie.—p. 479.

Journal of Tropical Medicine and Hygiene, London

November 15, XIX, No. 22

22 Suggestions for Institution of Rural Antimosquito Measures in Antigua. W. M. McDonald.—p. 261.

Lancet, London

December 2, II, No. 4866

23 *Cases of Tetanus Treated in Home Military Hospitals. D. Bruce. —p. 929.
24 Injuries of War. A. M. Sheild.—p. 932.
25 Six Cases of Esophagectasia. H. B. Shaw and A. W. Wso.—p. 934.
26 Problem of Tuberculous Soldier. E. H. R. Harries.—p. 939.
27 *Three Cases of Acute Myeloid Leukemia in Children Under Seven. A. Ross.—p. 940.
28 Ligature of Left Hypogastric Artery for Traumatic Gluteal Aneurysm. H. M. Frost.—p. 942.

23. Treatment of Tetanus.—Among 195 cases under consideration by Bruce, 77 are noted as having been treated with antitetanic serum before the onset of symptoms; all these were inoculated overseas. Not a single case is reported as having received a prophylactic injection of antitoxin in any home hospital. Of these 77, 44 recovered and 33 died, giving a mortality of 42.8 per cent. Of the remaining 118, of which there is no record of prophylactic treatment, 56 recovered and 62 died; 52.5 per cent. Of 50 patients inoculated on day of wound, the 29 patients which recovered had an average incubation period of 37.8 days. Of the 21 fatal cases the average incubation was thirty-three days. Of 67 patients inoculated within five days of having been wounded, the 38 patients which recovered had an average incubation period of 37.7 days; the 29 which died had an average incubation period of twenty-eight days. Out of the total of 195 cases the number treated with antitetanic serum after the onset of symptoms was 175 (90 per cent.). Twenty cases did not receive curative treatment with antitetanic serum in England. Of these 6 recovered and 14 died; mortality, 70 per cent. Of the 175 patients which received serum treatment 92 recovered and 83 died; mortality, 47.4 per cent. All evidence goes to show that antitoxin is the more effective the earlier in the disease it is given. Twenty-two cases were treated by phenol; 7 recovered, 15 died; mortality, 68 per cent. Eighteen cases were treated by magnesium sulphate, 6 by subcutaneous injection; 4 recovered and 14 died; mortality, 78 per cent..

The advantage of the intraspinal route over the subcutaneous or other routes was not conclusive. With our present knowledge the treatment of a case of tetanus, Bruce says, might be as follows: (*a*) place in a quiet, darkened room under the care of a sympathetic and capable nurse. "Rest, sleep and food" are looked on as the first essentials of treatment; (*b*) if thorough surgical treatment is carried out on wounds from the beginning, so as not to allow the presence of necrotic tissues or foreign bodies, the number of cases of tetanus should sensibly diminish, if not altogether disappear. But if a case does occur then the wound should not be actively interfered with until the tetanic symptoms have subsided; (*c*) the intraspinal injection of large doses of anti toxin, of high potency if available, should be begun at once, and supplemented by intramuscular and subcutaneous injections; (*d*) in addition, if necessary, the patient should receive sedatives, of which morphin in ¼ grain dose and administered every four hours is perhaps the most suitable. Chloral and other sedatives are also given by the mouth or rectum.

27. Acute Myeloid Leukemia in Young Children.—In Ross' 3 cases (fatal) no very definite history of onset could be obtained, and it was usually the discovery of glands or of an enlarged liver and spleen that led to a blood examination and thence to a diagnosis. In two cases the mouth, teeth and gums were in a bad state; in the remaining one they were good. In two very definite subcutaneous and other hemorrhages were present clinically; in one the presence of hemorrhages was doubtful, a suspicious spot or two only being observed. In all the enlargement of the liver and spleen, while perfectly obvious and definite, was only of a moderate degree. All had one or more sets of glands palpable and enlarged to a greater or less extent.

Hemorrhages constituted the principal feature in the two permitted necropsies of Cases 1 and 3. In both the pericardium and heart muscle showed petechiae; in addition, in each the latter gave macroscopic evidence of fatty change. In Case 1 the marrow contained 96.66 per cent. of nongranular mononuclear cells and 92.33 per cent. of myeloblastic or stem cell types; also for Case 3 in the marrow count the percentage figures of the same varieties of cell were 91.5 and 84.5 respectively. In every example the deficiency of red cells was great. Case 3 alone had an antemortem count of just over 2½ millions; on the other hand, Cases 1 and 2 were each about 1½ millions at the final examination. In no instance was a count of 3 millions obtained. The color index was 0.8 for two and 0.6 to 0.7 in the remaining one. Nucleated red cells were usually absent, and always so before death; only 8 were seen in the first differential count of Case 1 and none afterward; they were wanting in Case 3, and in 2 a single megaloblast was once observed in five counts.

In Case 1 myeloblasts were 75 per cent. and lymphocytes 23.33 per cent., to be followed by percentages of 58.5 and 36 respectively. In Case 2 the percentage of myeloblasts taken in the order of five counts were 42.5, 67.5, 81.0, 60.5 and 72.5. In Case 3 the myeloblasts reached 86 per cent. in the only examination that was possible. Next taking the leukocytes, the only example showing anything approaching a leukocytosis was Case 2, namely, 17,200 on the first examination and 22,000 on the third; later on before death the counts were 7,800 and 3,132. Case 1 gave counts of 6,900 and 2,200. In Case 3 the leukopenia amounted to 1,132. Although few cells could be got together to form a differential count, the predominance of the myeloblast was unquestionable. Confirmation was added by the postmortem findings and the count of the marrow film. Case 1 was 6 years of age; Case 2, 3½ years and Case 6, 5½ years old.

Medical Journal of Australia, Sydney

October 28, II, No. 18

29 **Biologic Aspects of Venereal Diseases Problem.** J. B. Cleland.—p. 359.
30 **Venereal Problem.** R. Arthur.—p. 361.
31 **Some Cases in 1915-1916 Epidemic of Infantile Paralysis.** R. B. Wade.—p. 364.

Medical Journal of Australia, Sydney

November 4, II, No. 19

32 **Administrative Control of Pulmonary Tuberculosis in Australia.** J. K. Patrick.—p. 379. To be continued.
33 *Point in Technic in Cultivation of Meningococcus. R. O. Douglas. —p. 382.
34 **Insecticidal Fumigation in Ships, with Special Reference to Use of Hydrocyanic Acid and Prevention of Ship Borne Yellow Fever.** C. E. Corlette.—p. 384. To be continued.
35 **Case of Diabetic Conjunctivitis.** G. H. Hogg.—p. 387.

33. Cultivation of Meningococcus.—In all attempts to grow the meningococcus, Douglas says, much greater certainty of success may be expected if the medium used is warmed to optimum temperature before the inoculation.

Sei-I-Kwai Medical Journal, Tokyo

November, XXXV, No. 11

36 **Investigation of Diabetes Mellitus Among Japanese.** S. Iwai.—p. 65. To be continued.

Annales de Gynécologie et d'Obstétrique, Paris

September-October, XII, pp. 257-320

37 **Delivery of Double-Headed Child.** (Naissance d'un monstre dérodyme.) A. Herrgott.—p. 257.
38 **Embryologic Study of Beef Double Monster.** (Historique des monstruosités et étude embryologique d'un monstre double: anadidyme monocéphalien.) A. Keilin.—p. 268.
39 *Origin of Certain Types of Monsters. (Tératogenèse d'un monstre humain, athoracique, acardiaque, acéphalique.) H. O. White. —p. 298.

39. Origin of Athoracic Monsters.—White's communication describes a monstrosity, the third of a set of triplets. The cephalic portion of the Müllerian ducts evidently had failed to develop, while the caudal portion had developed normally. The article is illustrated and some literature on the subject of this type of teratogenesis is reviewed. His conclusion is that it seems logical to assume some constriction cutting off part of the embryonal disk, amputating the fetus, as it were.

Archives des Mal. de l'App. Digestif, Paris

IX, No. 1, pp. 1-60

40 *Vertigo from Ear Trouble Aggravated by Stomach Factors. (Vertige stomacal et vertige auriculaire.) G. Linossier.—p. 1.
41 *Polypous Carcinoma of the Stomach. W. Oettinger and P.-L. Marie.—p. 18.
42 *Stenosis of the Pylorus plus Occlusion of the Intestine; Three Cases. A. Mathieu and A. S. Alivisatos.—p. 26.

40. Treatment of Vertigo.—Linossier shows by the literature of the last decade how the old conception of vertigo from stomach disturbance is being restricted more and more. The consensus of opinion is now that the internal ear is responsible for vertigo in the majority of cases, but Linossier insists that—even admitting that the labyrinth is responsible for the dizziness—yet gastric disturbance is often a subsidiary factor, and correction of this may lower the threshold of the other below the symptom-producing point. There may be a triple combination of disturbance in the labyrinth, the stomach and the nervous system, and treatment of the accessible factors will influence the others. He emphasizes the necessity for study and treatment of the digestive apparatus in the routine treatment of Ménière's disease.

41. Polypous Cancer of the Stomach.—In the case reported, the man of 48 rapidly recuperated after removal of a malignant tumor, almost smooth and as large as a mandarin orange, growing from a fold in the stomach wall near the lesser curvature, on a short pedicle. The whole tumor weighed 134 gm. and measured 56 by 75 by 65 mm. It was in two lobes and was free from ulceration. The only symptoms had been hemorrhages, each preceded by an attack of vertigo and buzzing in the ears and loss of consciousness. No functional nor objective signs of gastric trouble otherwise could be detected except that chemical investigation showed occult blood and apepsia. At the laparotomy the tumor could be felt rolling around in the stomach, and it was easily resected. The diagnosis of cancer was based on the apepsia and constant occult blood in the stools although there was but little loss of weight and no appreciable digestive disturbances except the gastric hemorrhages. A liver affection might have been responsible for these. Palpation and roentgenoscopy were also negative.

42. Stenosis of the Pylorus with Occlusion of Neighboring Intestine.—In the three cases reported, the strangulation of the bowel was from adhesions developing in consequence of a chronic inflammatory process in the pylorus region. In one case there was ulceration which led to stenosis of the colon in the iliac region. The bowel was released from the adhesions but two years later there was stenosis of the pylorus from the same cause. Operative treatment restored the man to clinical health. In the second case the jejunum was strangulated and kinked by adhesions within two months of a gastro-enterostomy done for cancerous stenosis of the pylorus. The third case terminated fatally, with attacks of tetany. The pyloric stenosis was due to an ulcer; an operation for a gallstone impacted in the common bile duct was also necessary. The stenosis of the jejunum did not develop until seven years after the gastro-enterostomy for the ulcer. The possibility of these tardy sequels of an ulcer should not be forgotten when confronted with a case of occlusion of the bowel with or without stenosis of the pylorus.

Bulletin de l'Académie de Médecine, Paris

November 7, LXXVI, No. 44, pp. 345-368

43 *Ictero-Hemorrhagic Spirochetosis. Committee Report.—p. 346.
44 **Relations between Psoriasis and Tuberculosis.** Gaucher.—p. 361.
45 **Shrapnel Ball Free in Left Ventricle.** Lobligeois.—p. 364. Described in Paris Letter, p. 1861.
46 *Air Bubble Test for Coagulating Time of Blood. (Estimation du temps de coagulation du sang in vitro, par le procédé de la "bulle d'air.") E. Lenoble.—p. 365.
47 **Revival of Endemic Malaria in France.** (Reviviscence, en 1916, d'un foyer endémique de paludisme en Beauce.) P. Rousseau. p. 367.

43. Febrile Hemorrhagic Jaundice.—As a spirochete has been found probably responsible for this disease, it is now called "icterohemorrhagic spirochetosis" by some writers, as it differs in certain respects from the classic Weil's disease. The history, clinical details and treatment and prophylaxis are discussed at length in this committee report on the article by Martin and Pettit which was reviewed in these columns Dec. 9, 1916, p. 1794.

46. Air Bubble Test for Coagulation of Blood.—Lenoble imprisons a little air in the test tube with the blood (Hayem's hematimeter). The air moves around, like the drop of fluid in a spirit level, as long as the blood is fluid. The moment the blood begins to coagulate, the bubble of air is immobilized and no slow tilting of the tube makes it move again. He has found it possible by this means to estimate the very second when coagulation begins, with greater precision than by any other technic.

Presse Médicale, Paris

November 20, XXIV, No. 64, pp. 513-528

48 *The Nervous Shock. (Le choc nerveux.) H. Roger.—p. 513.
49 *Treatment of Foreign Bodies in the Lungs. (Traitement des corps étrangers du poumon.) V. Pauchet.—p. 516.

50 *Bone Graft to Reenforce Fractured Tibia. (Quatre tentatives de greffes osseuses pour pertes de substance tibiale.) P. Cruet.—p. 517.
51 Traumatic Anastomosis between Urethra and Rectum. J. Boeckel.—p. 520.

48. **The Nervous Shock.**—This is a summary of our present knowledge on the nervous shock from trauma from operations, especially operations on the abdominal viscera, and on moral shock from emotional stress. Roger comments on the important contributions made by American surgeons and research workers to the study of shock, and reports some personal experiences showing the modification of the blood pressure in rabbits in the course of operations on the abdominal viscera. The carotid artery was connected with the manometer, and it was seen that incising the abdominal wall did not lower the pressure, but maltreating the intestine caused it to drop and the decline was lower and more durable, the more serious the injury of the bowel. Roger reports further experiments on rabbits which confirm Crile's statements in regard to the prompt reaction to centripetal stimulation when shock is not very deep, the blood pressure rising. But when the shock is profound the response is exactly the reverse, the pressure dropping durably. He noticed further an increase in the sugar content of the blood during shock, probably result of reduced oxidations. Also that shock retards the effect of intoxications. A dose of strychnin which would cause tetanic contractions in fourteen minutes in normal frogs, did not cause them until after an hour when injected into frogs in a state of shock. By intravenous injection the interval was from twenty to twenty-five minutes, instead of less than one minute.

49. **Projectiles in the Lungs.**—Pauchet emphasizes the simplicity and ease with which a projectile can be removed from the lung under regional and paravertebral anesthesia. This is far preferable to general anesthesia for operations on the lungs, as the respiration proceeds normally and the patient can be moved around to suit.

50. **Graft to Close Gap in Tibia.**—The gap in the tibia was from 2 to 9 cm. long in the four cases described. Cruet cut a long subperiosteal strip from the crest of the tibia and twisted it around to bridge the gap. It soon grew solidly in place, and was able to produce its own callus when a graft accidentally broke in one of the cases. He gives six illustrations of each of his four cases, and commends the method to others. He fastens the graft in place with bronze wire. There was slight suppuration in two cases, and in these consolidation came quicker and seemed to be more durable than when there was no suppuration. It probably stimulated the periosteum to increased functioning. The graft with its periosteum is a living tissue which retains its shape and grows solidly to its support in time and may even become hypertrophied. The ends of the graft are planted in the tibia stumps.

Berliner klinische Wochenschrift

October 30, LIII, No. 44, pp. 1185-1208

52 Difficulty of Differential Diagnosis of Dysentery. (Bedeutung der anatomischen Diagnose der Ruhr.) D. v. Hansemann.—p. 1185.
53 *Typhus and Lice. (Ueber Fleckfieber und Entlausung.) Arneth.—p. 1187.
54 *Five-Day Fever. (Ueber Fünftagefieber.) Linden.—p. 1191.
55 Experience in Treatment of Syphilis. M. von Zeissl.—p. 1193. M. von Zeissl.—p. 1195.
56 *Objective Test for Night Blindness. (Ein objektives Symptom zur Prüfung der Nachtblindheit.) H. Feilchenfeld.—p. 1195.

53. **Typhus and Lice.**—The freedom from typhus in Arneth's corps, although it was occasionally imported but never spread, he ascribes to the systematic search for lice which is imposed on the men twice a day. Morning and afternoon they are given time to examine their bodies, clothing and bedding for lice. This was obligatory whether they had lice or not. The men were glad to take the time and pains for the search, and the nurses did it for the sick and wounded. Nothing else answers the purpose continuously, not even naphthalin, to keep lice away. This loses its odor in two weeks.

54. **Five-Day Fever.**—In Linden's four cases there was a regular recurrence of fever every fifth day on an average, but the predominant symptoms were intense pains in the calves, in the limbs, and headache. The gastro-intestinal canal also seemed to be involved and in one of his cases there was a tetanic condition.

56. **Objective Test for Night Blindness.**—Feilchenfeld noticed that after being in the dark for an hour, the eye will react to a weak light stimulus which, before the dark hour, would not have modified it in the least. By this means it is possible to detect true nyctalopia with a pocket flash light in the last phase of its activity.

Deutsche medizinische Wochenschrift, Berlin

November 2, XLII, No. 44, pp. 1341-1372

57 *Thumb Made from Radius after Amputation of Hand. (Lebendiger Handersatz durch Schaffung eines neuen Gelenks.) Walcher.—p. 1341.
58 Dysenteriform Intestinal Disease with Edema. T. Rumpel and A. V. Knack.—p. 1342. Continued.
59 *Extract of Blood Platelets in Treatment of Hemorrhagic Diseases and Hemophilia. (Zur Behandlung der häm. Diathesen und der Hämophilie durch das Koagulen.) A. Fonio.—p. 1344.
60 Intravenous Infusion of Camphor. Hosemann.—p. 1348.
61 Deviation of Complement by Hemolytic Rabbit Immune Serums. P. Schmidt.—p. 1350.
62 Transplantation of Tendons to Remedy Radial Paralysis. (Zur Behandlung der Radialislähmung.) H. Weitz.—p. 1351.
63 The Wassermann Test in General Practice. (Zur Ausführung der Wassermannschen Reaktion in der Praxis.) E. Saalfeld.—p. 1351.
64 *No Memory of Gunshot Wound of the Head. (Fehlende Erinnerung des Verletzten für einen Schädelschuss. Verkannter Mordversuch.) J. Härtl.—p. 1352.
65 *Acute Articular Rheumatism with Meningitis. Herzog.—p. 1353.
66 *The Typhus Germ. (Zur Aetiologie des Fleckfiebers.) H. da Rocha-Lima.—p. 1353.
67 Combination of Syphilitic Primary Chancre and Diphtheric Vulvitis in Girl of Seven. H. Egyedi.—p. 1354.
68 Case of Persisting Optochin Amaurosis. Lorant.—p. 1355.
69 Advantages of Centralized Organization in Each Province of all Forces Working for Health: the Social Insurance, Public Health and Military Services. (Zweckverbände für Gesundheitsfürsorge.) Ascher.—p. 1355.

57. **Making a Thumb with Movable Joint Out of the Radius.**—The right hand had been amputated in the case described by Walcher with five illustrations. He cut down to the radius and divided it about 6 cm. from the lower end. In the gap thus formed he inserted a piece of fascia from the thigh, folded over to bring the fat side inside. This was sutured in place. The lower end of the radius thus forms a new "thumb." Extension is somewhat hampered, but as all the flexion tendons are fastened to the new thumb, it can be flexed with great force. Supination and pronation are also possible. The man wears a supporting open splint for the new thumb to press against, like the support afforded the natural thumb by the palm. One illustration shows the man holding a wooden chair in the air with the grasp from the new hand. Six months have passed since the operation and, as the functional use of the hand has regularly improved, it may be counted on to be permanent.

59. **Extract of Blood Platelets in Treatment of Hemorrhagic Tendency.**—Fonio's long report on intravenous treatment of hemorrhagic diatheses in general with his extract of blood platelets emphasizes that, as this has only a symptomatic action, it has to be kept up indefinitely. It is certainly, he says, the simplest and easiest method of supplying the lacking blood platelets when this seems to be the cause of the trouble, as in Werlhof's disease. In hemophilia, on the other hand, a single application may turn the scale and a permanent cure follow. He urges that in every case of a hemorrhagic tendency the blood platelet count should be made as regularly as the hemoglobin percentage is estimated in chlorosis, the sugar in diabetic urine, etc. This method of treatment is contraindicated when there is reason to suspect changes in the vessel walls or abnormal conditions in the circulation liable to favor thrombosis or embolism, as in certain stages of syphilis, arteriosclerosis, inanition and septic processes.

64. **No Memory of Having Been Shot.**—The man remembered all the happenings up to and after his supposed "stroke of apoplexy," but reading in the paper of a murder under similar circumstances, he found that the murderer was the same stranger who had been with him at the time of his

"stroke." Roentgen examination then revealed a bullet in the upper spine. It had inflicted a grazing wound on the head, ascribed at the time to the fall during the "stroke."

65. **Acute Arthritis with Meningitis.**—In Herzog's case the joint troubles seemed to be the work of the meningococcus, but marked benefit was realized from salicylic medication in this and in three other cases in which acute articular rheumatism seemed to casually accompany meningitis. In the case described at length the joint trouble was not improved by puncture, potassium iodid or serotherapy, but it yielded promptly to the salicylates.

66. **The Typhus Germ.**—Rocha-Lima reiterates that the *Rickettsia prowazeki* may be and probably is a bacillus, but until absolutely certain of this he gives it this non-committal name. He adds that when its bacterial nature is established beyond question, then the "rickettsia" can be dropped and the germ called merely *Bacillus prowazeki*.

Medizinische Klinik, Berlin

October 22, XII, No. 43, pp. 1117-1142

70 *Infectious Diseases among the Troops. (Erfahrungen über Infektionskrankheiten im Felde.) A. Lehndorff.—p. 1117.
71 *Treatment of Eye Affections by Parenteral Injection of Nonspecific Protein—Milk. (Heilung der Iritis und anderer Augenerkrankungen durch parenterale Eiweissinjektionen.) L. Müller and C. Thanner.—p. 1120.
72 Tetanus in the First Year of the War. H. Pribram.—p. 1124. Concluded.
73 Experience of a Surgeon at Main Dressing Station. (Chirurgische Tätigkeit und Erfahrungen auf dem Hauptverbandplatz.) Petermann.—p. 1127.
74 Unilateral Dislocation of Cervical Vertebrae. (Ueber halbseitige Halswirbelluxationen.) E. Schmidt.—p. 1132.
75 Adjustable Extension Splint Made from Cramer Ladder Splint. (Die Lyraschiene für den Arm.) O. Vulpius.—p. 1133.

70. **Infectious Diseases in the Field.**—Lehndorff has been connected in turn with a number of different hospitals for infectious diseases, all more or less close to the firing line, and he comments on the atypical clinical picture presented by most of the common infectious diseases. He has had opportunity to compare the course in those with and without vaccination against typhoid. In the vaccinated the course was much milder and shorter, the mortality during the last nine months, for instance, was only 4.5 per cent. while it was 24.1 per cent. in the nonvaccinated civilians. But the vaccination did not seem to ward off or mitigate complications. Agglutination is not instructive, his experience indicates, except from 1:400 onward. Early and high agglutination seems to be a favorable omen. In differentiating typhus from typhoid, a sudden onset is no criterion. Either may begin suddenly or insidiously, with or without a prodrome or chill, and the fever curve be atypical. There may or may not be a catarrhal condition of the upper air passages and eyes with typhus while severe laryngitis he found common in typhoid. Acceleration or slowing of the pulse may occur with either, as also central deafness and the local exacerbation of the exanthem when the skin is rubbed with a rubber eraser, the *Radiergummiphänomen*. The exanthem, in short, is the main differentiating feature for typhus. It is almost invariably present, in adults at least. In the forty-nine cases he examined for the purpose he found an enanthem on the hard palate, uvula and the pillars. The mind is usually clear during the first four days of typhus, and there is characteristic euphoria, in marked contrast to the depression in typhoid. In typhoid the mind grows clear as the fever subsides, but with typhus as the fever subsides the delirium may increase. Necropsy explains this by the anatomic changes in the brain and the edema and hyperemia of the meninges. Another characteristic feature of typhus is the resistance displayed by the fever to antipyretics. In typhoid, in the third week as the ulcerations are healing occult or visible blood may be found in the stools. Two physicians who had been vaccinated against typhus developed a severe type of typhus but finally recovered. The Felix-Weil reaction proved an important differential measure. He adds that it was negative in other diseases.

He says of cholera that the only treatment that displayed any efficacy was a preparation of digitalis. Drugs given by the mouth were vomited too soon for effectual action. Even saline infusion did not help. The algid phase seems to be due to a toxic paralysis of the vasomotors, especially in the splanchnic area. He also describes an intermittent fever of a cyclic character, keeping up for weeks, the febrile attacks only a day or two long. The spleen was not enlarged but as the temperature rose there were paroxysms of pain in the calves. The malaria and relapsing fever germs could not be found in the blood. This disease was encountered only in the swamps along the Ikwa river so he calls it Ikwa fever.

71. **Parenteral Injections of Albumin in Treatment of Eye Affections.**—Müller and Thanner cite a number of clinicians who have reported excellent therapeutic results from injection of nonspecific protein to influence acute and chronic infectious diseases. They then describe personal experiences with this method of treatment in eye affections. They selected milk as the best available form of albumin for the purpose, not only on account of its accessibility but because the patients have no dread of milk as they might of a drug. The dose was 5 c.c. of fresh whole milk, boiled for four minutes, and injected into the gluteal muscle. In four cases of parenchymatous keratitis from inherited syphilis practically no benefit had been derived from specific treatment, but marked improvement set in after a single injection of the milk, and continued to progress as one or four more injections were given. The patients were 11, 19 and 32 years old, the older patient being given an albumose preparation instead of the milk. The milk injections were given exclusively in eleven cases of severe primary iritis, and prompt and striking improvement testifies emphatically, they declare, to the great value of the principle of parenteral treatment with some protein. Within twenty-four hours the photophobia and pains had all vanished after having tormented the patients for weeks, and the whole trouble was materially shortened. The iritis was ascribed to rheumatism in most of the cases; one was of gonorrheal origin, and another patient had had a gonorrheal iritis twenty years before. The improvement was not so prompt in these cases and a second injection was required before the cure was complete. From one to five injections were made in the different cases.

Favorable results were also obtained in nine cases of opacity of the cornea with or without choroiditis. The cornea partly cleared up remarkably quickly, but complete subsidence of the opacity was not realized in any case and the choroiditis did not seem to be modified. In one case of gonorrheal conjunctivitis of long standing, the edema of the lids and conjunctiva promptly subsided, the effect in this case being so conclusive, they say, that this treatment should certainly be given a trial in every case of gonorrheal conjunctivitis, at least in adults. They make three injections in a week and this usually completes the cure. If not, they continue after a pause. No by-effects were noticed in any case with the exception of one man of 56 who complained of a sensation of oppression over the heart but it disappeared within twenty-four hours.

Gazzetta degli Ospedali e delle Cliniche, Milan

November 9, XXXVII, No. 90, pp. 1409-1424

76 *Experimental Cholemia. (Azione della bile sul sistema nervoso centrale e periferica. I processi di disintossicazione nella colemia sperimentale.) A. Berti.—p. 1413.

November 12, No. 91, pp. 1425-1440

77 Conservative Surgery; Four Special Cases. S. Tarantino.—p. 1426.

November 16, No. 92, pp. 1441-1456

78 Pyelotomy Versus Nephrotomy. L. A. Oliva.—p. 1444.

76. **Experimental Cholemia.**—In this instalment of his long report of research in this line, Berti describes the action on the central and peripheral nervous systems of the bile injected into a vein. Also its action on the ductless glands, on the temperature and metabolism and, further, the various ways in which the organism throws off the bile or neutralizes or overcomes its injurious properties.

Policlinico, Rome

November 12, XXIII, No. 46, pp. 1329-1354

79 *Pathogenesis of Infectious Febrile Jaundice. (Ittero catrense.) V. Rossi.—p. 1329; (Ittero epidemico.) M. Chiadini.—p. 1341.
80 Involvement of Nerves or Other Tissues in Freezing of Hands and Feet. (Considerazioni sul congelamento delle estremita degli arti.) V. Bedarida.—p. 1339.

79. **Jaundice in Soldiers.**—Rosei refers to jaundice coming on with gastro-intestinal symptoms, lassitude and diarrhea. There was no fever except in one of his fifteen cases, and the spleen was not enlarged. No micro-organisms could be cultivated from the blood except occasionally paratyphoid B bacilli—possibly a casual coincidence. There was nothing to suggest a contagious element, but much that indicated that an excess of meat in the diet was responsible for the upset entailing the jaundice and other symptoms. The soldiers were mostly from the rural districts, not accustomed to eating so much meat as is supplied in the army ration, while they miss the fresh vegetables and fruit to which they have been accustomed. When the diet could be modified in this respect, clinically normal conditions were soon restored. Chiadini reports the necropsy findings in three cases in which there was an unmistakable paratyphoid A or B infection localized in the liver and bile passages.

Siglo Medico, Madrid

November 4, LXIII, No. 3282, pp. 705-720

81 Duodenal Ileus. (Oclusion duodenal.) S. de S. Maria.—p. 706.
82 *Rarity of Tuberculosis in Persons Working in Lime; Therapeutic Deductions. (El terreno y la zemilla.) G. Fisac.—p. 717.

November 11, No. 3283, pp. 721-736

83 History and Evolution of Operative Treatment of Glaucoma. J. A. Barraquer.—p. 722.
84 Ferments of the Plasma and of the Serum. G. Pittaluga.—p. 727.

82. **Rarity of Tuberculosis in Workers on Lime.**—Fisac recalls that in various national and international congresses he has repeatedly drawn attention to the immunity against tuberculosis displayed by persons whose occupation brings them into close contact with lime and plaster. No one has impugned his statements in this line from 1905 to 1916, but no one has acted on the logical therapeutic conclusions therefrom, giving time to thoroughly modify the soil in treatment of tuberculosis, on a scale large enough to be conclusive. He reiterates that each individual soil has its special chemical composition. How otherwise could a dog recognize its master by the sense of smell alone? This chemical composition decides whether tubercle bacilli can get a foothold and generate toxins in profusion or whether the tissues react with a fibrous growth, checking the proliferation of the germs. He quotes data tending to show that lungs and bones affected with tuberculosis have an abnormally low lime content. All the evidence to date is in favor of measures to render the soil more resistant, and he says that the compounds of lime take a leading position among such measures. He gives no technical nor clinical details here beyond these general statements.

Russkiy Vrach, Petrograd

XV, No. 40, pp. 937-960

85 Military Orthopedics and Supplying Artificial Limbs. (O doliechivanii preterpievshikh povrezhdeniya na voinie i o snabzhenii uviechnikh protezami.) G. I. Turner.—p. 937.
86 *Neutralization of Toxins by the Isolated Kidney and Spleen. (Obezvrezhivanie yadov izolirovannimi pochkoi i selezenkoi.) V. N. Vorontsoff.—p. 947.
87 War Hysteria and Its Treatment. (Akineticheskiya i hyperkineticheskiya formi boevoi isterie i sposobi ikh liecheniya.) L. A. Arinshtein.—p. 950.

86. **Neutralization of Toxins by Isolated Kidney and Spleen.**—The experiments were made on dogs. The isolated kidney washed free from blood took up or destroyed a certain amount of alcohol passed through it in Ringer-Locke solution, but not nearly as much as isolated muscles or the isolated liver. The kidney also failed to display any efficacy in reducing the toxicity of ricin passed through it under the same conditions, and the isolated spleen failed to reduce the toxicity of ricin and muscarin. The details of the tests are given in six tables showing the effect when the fluids afterward were injected into white mice.

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88 *Fibrous Ostitis with Tumor Production and So-Called Giant-Cell Sarcoma. (Benceyster og saakaldt kjæmpecellesarkom.) E. Platou.—p. 1397.
89 Huntington's Chorea in a Man and Woman in the Thirties. V. Magnus.—p. 1433.
90 *Obstruction of Inferior Posterior Cerebellar Artery; Two Cases. V. Magnus.—p. 1438.
91 Infection with Proteus Vulgaris; Two Cases. T. Thjøtta.—p. 1443.
92 *The Functions of the Spleen. (Eksperimentelle bidrag til studiet av miltens funktion.) A. Brinchmann.—p. 1451. Concluded.

88. **Bone Cysts and Sarcomas.**—Platou shows in thirty illustrations the frequent difficulty experienced in distinguishing between fibrous ostitis, inducing a tumor, and sarcoma. The former is benign even when the periosteum has been broken through. The Roentgen picture is usually characteristic, and treatment must be surgical, removing all tissues affected into sound tissue, but otherwise conservative, leaving as much of the periosteum as possible. Even if not certain whether the affection is this fibrous ostitis or sarcoma, both patient and physician are usually inclined to run the risk of assuming the former rather than exarticulating the femur, often the only recourse when malignant disease is certain. If the tumor is malignant, he adds, the prognosis is dubious even with the most radical treatment, while if the trouble is simply ostitis the patient is a cripple for life when a conservative operation might have restored him to complete health. The persons affected are usually under 20, but in the nine cases here described the ages ranged from 10 to 46, five being over 20. The average thus was 26, a higher age than others have encountered as a rule. When the fibrous ostitis is associated with a giant-cell tumor, the resemblance to sarcoma is striking, but the slow development and good general health turn the scale away from sarcoma. The outline is sharper than with sarcoma; the periosteum shows more involvement with a central gumma or abscess than with this ostitis. A tuberculous process may also be difficult to differentiate, but these patients are usually younger, and a fistula develops before the process has reached a corresponding stage.

90. **Obstruction of Cerebellar Artery.**—The clinical picture was practically identical in the two cases described: in the midst of good health, sudden vertigo, ataxia in the left arm and leg, and crossed right sensory paralysis, with, in one case, aphonia, ptosis and myosis.

92. **The Functioning of the Spleen.**—The first instalment of this article was reviewed in these columns, Nov. 11, p. 1482, describing Brinchmann's experimental work on rabbits and guinea-pigs. Here he describes research undertaken to ascertain the modifications of the blood induced by feeding with spleen substance. The blood findings and other details day by day are tabulated from animals fed with spleen substance. The data presented demonstrate that the spleen is an organ with a highly complex function. There is considerable evidence that in some indirect way it exerts a regulating influence on the blood-producing organs. It thus steadies the factors which direct the normal production and destruction of the elements of the blood. None of the spleen's functions seem to be specific, and the data indicate that some of these functions are accomplished with the cooperation of other organs, the liver, for instance. Assumption of a hormone as responsible for spleen functioning has not been confirmed to date. Besides the experiments on guinea-pigs, rabbits, dogs, rats and mice, Brinchmann applied spleen organotherapy also in some cases of anemia, in one presumably from myeloid metaplasia, of the type of anemia pseudoleukemica infantum. This patient was a youth of 17 and under the influence of spleen feeding—a teaspoonful of fresh scraped beef spleen three times a day, given in his porridge—the proportion of nucleated reds dropped in a most remarkable manner. On suspension of the spleen feeding, or when he was given corresponding amounts of scraped raw meat, the proportion either rose or remained stationary. The figure declined from 7,520 to 2,650 in three weeks of the spleen feeding. It rose again to 13,600 when the spleen was discontinued, reaching 16,400 the day after the spleen feeding had been resumed, and then dropping under it to 6,600. Beef meat was then given instead, and the figure dropped anew to 5,180. As the spleen feeding was resumed in four days the figure dropped to 2,450. The patient then was put on a mixed diet without spleen, and the figure dropped to 1,140 and then to zero, all in the course of about two months and a half. This paralleled the findings in the experiments on the animals.

Miscellany

The Ethics of Scientific Controversy

[The following is not a strictly medical discussion but, considering its author and the circumstances under which it was written, we feel sure it will be read with interest. It is the introduction of Sir Almroth Wright's reply to Sir Watson Cheyne in their controversy on the treatment of infected war-wounds. It appeared in the London *Lancet*, Sept. 16, 1916, page 503.—ED.]

It is a very open question whether polemical controversy is, or is not, an effective instrument for the advancement of the truth.

Of course, the man who has an open mind can always learn something from discussion. In dealing with complicated subject-matters such as that of the proper treatment of wounds, trustworthy conclusions are reached only when we have been compelled to look at the facts from opposite points of view. And when in controversy one man sets up a thesis, and the next man disputes it, these conflicting suggestions may have intellectual value. They may tend to make our mental outlook less narrow, and make us balance alternatives.

But when all is said and done, only a small minority of mankind have their minds clarified by polemical controversy. The greater number come away confused and in perplexity as to where the truth lies.

And no wonder. It is difficult, even for the man who has under his hands full materials for controlling such inductions, to decide between competing generalizations; and no one, knowing of the facts only what is put before him in controversy, would be in a position to reach such a decision. Again, it is, in all ratiocination which deals with the concrete, difficult to avoid lapsing into fallacy. And in controversy this is specially difficult. For the ordinary controversialist is perpetually leading his reader into verbal snares and oratorical traps, and into all manner of logical pitfalls. But while for these reasons polemical controversy conducts into perplexity and error, this really holds only of the broader and more difficult, and not of the narrower and less difficult inductions. And when we come to definite statements concerning questions of fact, the truth or falsity of these is in the course of controversy definitely settled. Again, polemical discussion renders also other useful service. It corrects incidental misapprehensions caused by inadequacy and default in the original exposition; and it rectifies more especially those initial and fundamental misunderstandings which come from the expositor having failed to keep touch with his reader. What has generally happened in the setting out of a new generalization is that the expositor—to keep things simple, and make a less circumscribed and less ephemeral appeal—has started off quite de novo, and has addressed himself to an entirely ideal type of reader. He has taken it that his readers will be of that sort that will be prepared to make a quite new start; and will have no fixed ideas to extirpate, and no cherished mental pictures to expunge. And he has further made the assumption that his readers will give to every argument its proper logical weight; will, when qualifications are attached to a statement, take close note of these; will not confuse things; and will assign to every term its precise meaning and quantitative value. Now, more often than not, exposition conducted upon the aforementioned assumptions and on general lines will not come off successfully. It will make as good as no impression upon the man who is attached to another reading of the facts, and who treasures other mental pictures. And as for the ordinary reader, exposition on general lines will at best only start him upon the road. It will not prevent his being held up by all sorts of small difficulties. And when he is held up exposition of the same kind as before will not extricate him. What he will then require is that kind of intellectual assistance that is given in private coaching.

And it is just this sort of intellectual help that controversy is competent to supply. What polemical criticism really does do is to set out the difficulties encountered by the reader who approaches the new doctrine with the conventional conceptions. And the function of the controversialist who undertakes the reply is to stand beside the reader and to explain things to him, whenever in reading a polemical criticism he is saying to himself: "Now what is the answer to that?" And this discovery of and replying to objections is indispensable to intellectual progress. In the end it is always controversy—it may be public, it may be private; it may be honest, it may be dishonest, controversy—that decides the fate of every generalization.

But in polemical controversy we have not only a conflict between two ideas, we have also a personal contest. And intellectual progress, and in particular the advancement of logic and intellectual morality, would seem to depend upon this factor of personal contest being always present in controversy.

For the ordinary man will not, on the chance that these may possibly some day enable him to decide between competing theories, attend to facts of science that have no personal interest; nor will he, on such a chance, listen to disquisitions on logical methods and the conduct of the intellect. But he can be got to attend to every kind of fact as soon as an important principle of practice, and the issue of a personal contest comes to turn upon it; and, given these conditions, every man will quite gladly consider points of logic and intellectual mortality. This is as much as to say: Controversy gives to every matter that comes into its orbit a vivifying personal interest, and in particular it makes of logic and intellectual ethics really live issues. It brings home to the mind that it really is desperately difficult in all ratiocination and deals with the concrete, to reason rightly. It shows up the confusion that results from using ambiguous and non-quantified terms; exposes loose and fallacious methods of proof which have got themselves accepted; shows that we ought to give consideration not only to familiar and acceptable, but also to unfamiliar and unacceptable, explanations; and makes apparent the moral danger of cherishing one's mental pictures till they turn into obsessions. And were it not for the interest that attaches to personal combat, I cannot think that any of these things—and they are the rules and ethics of the intellectual game—could ever be instilled into the ordinary man.

Moreover, the fact that thereby not ideas only, but men also, are adjudicated upon makes of controversy something more than a mere educational instrument; it also makes it an instrument of direct social service. When one reflects that it is public reputation that designates a man for office where he influences important action, and that it is popular estimation which gives driving force to a man's words, one sees that there is wanted some court of appeal to which popular estimates could be brought for revision, and some sort of machinery for settling whether this or that man who is trusted by the lay or professional public possesses the only kind of ability worth having—the gift of getting at the truth.

Now, we have in point of fact in polemical controversy a machinery for settling this. While, as we have seen, controversy can never enable a man who is out of touch with the facts to decide between competing doctrines, it does give to every reader data by which he can adjudicate between the men who are disputing about those doctrines. It does show whether the disputants are competent, or incompetent; logical, or illogical; *honest*—eschewing fallacious arguments, and giving way if they can no longer conscientiously hold their ground, or *intellectually dishonest and immoral*—trying, when things go against them, to make the worse appear the better reason; and resolutely holding out even when cumulative evidence piles up against them. And what is really wrong with the world is that, through reluctance to involve ourselves in controversy, and fear of offending public sentiment (which is want of moral courage), we allow many a man who has neither a gift for getting at the truth, nor yet (in my meaning of the word) intellectual honesty, to continue in undisturbed enjoyment of reputation and authority.

Now this, of course, runs counter to what is generally accepted. You hear everywhere that the personal element is the unethical element in every controversy. And the

cynic will confide to you that polemical controversy is always a personal vendetta. And this is the point of view from which controversy is judged. Whenever the question is raised as to whether it was, or was not, justifiable to have said this or that in controversy, your man of the world goes and turns up the previous papers to see what amount of provocation was given, and what reprisals it was legitimate to take. In other words, to the man of the world the whole thing is a question of retaliation; and justification is to him a question of provocation given. But, after all, polemical controversy is not on exactly the same ethical plane as the duel and vendetta; and its psychology is a little different. In the duel or vendetta there is always a personal and private issue, and only that. In controversy, though the private motive does often come in, there is always a matter of public concern—the question as to whether this or that generalization should be accepted. And while in polemical controversy there is, as in the vendetta, always a joy of battle—a satisfaction when you get your shots in straight—you do not in reputable controversy, any more than in actual warfare, derive satisfaction from wounds inflicted. You need not even be insensible.

But as soon as this possibility is hinted at, down there comes upon you the pacifist with his humanitarian proposals. And the sort of thing he says to you is this: "If you—the controversialist—are really not out for your pound of flesh, if what you want is to advance your cause, to smooth the way for the acceptance of your doctrine, and to prevent truth being obscured by false reasoning and intellectual immorality, then you could achieve all you want without hurting any individual. Whatever you have got to say, you can say impersonally. Or, if you really must have someone to attack, you could at any rate get rid of all that objectionable personal sting by attacking, instead of some unfortunate individual, the group or body corporate to which your particular antagonist belongs."

The real answer to this sort of humanitarian appeal is that it takes singularly little account of what I have referred to under the heading of direct social service; and it proceeds upon fundamental misconceptions. It bases itself upon the—in exposition admissible, in controversy inadmissible—false assumption that your reader has no *parti pris;* that he is governed entirely by intellect; that he is with respect to competing theories and disputants completely neutral, and had as lief attach himself to the one doctrine and the one disputant as the other. In other words, what you are asked to believe is that by pacific processes you can win all intellectual victories, and that you will in controversy get every one over to your side if you point out, without censure, and quite quietly, mistakes in fact and reasoning committed on the other side. But the brutal fact remains. All controversy is a warfare from which the one or the other of the parties has got to emerge discredited. And it is the task of every disputant to diminish the prestige of the protagonist on the other side; and also, if possible, to bring home to the reader that he is, when reading the author he favors, as liable to be led away into fallacy as is a man listening to an advocate setting out his cause.

But the pacifist still sees an opening left for his humanitarian intervention. It would still, so he thinks, be possible to attenuate the personal sting that controversy leaves by diverting the attack from the individual to the class to which he belongs. Prima facie there would appear to be logical point and also justice in this proposal. For behind the man who is proceeded against, there are always others who share his views. And in such a case equity would seem to require that the indictment should issue not against the individual but against the group.

But the moment we begin to think, things always look differently. One discovers that it would be almost impossible to frame an indictment which could equitably be brought against an entire group, let alone against a body corporate. For though men may hold a doctrine in common, you find, as soon as you come to investigate, that each holds it with a difference.

And again, as soon as one thinks it over, one realizes that there are two distinct types of controversial writing. In the one the materials on which the inductions rest are revised, new data being brought forward, and data which ought never to have been accepted being discarded; also fallacies are exposed; issues which have been tangled up together are unraveled; and throughout the prescriptions of logic and intellectual morality are observed. In critical comment of this kind every one, of no matter what school of thought, will gladly be a partner. But there is also polemical writing with which no one would willingly be associated. No one wants to be associated with controversial writing which takes its stand on erroneous data; which, no matter how intricate the facts, tells you that they can be construed in only one way; which then introduces confusion by using undefined and ambiguous terms, tangles up together issues which are logically distinct, and shows an intention to hold out everywhere against no matter what pressure of cumulative evidence. Again, no one wants to have anything to do with endeavors to knock out a controversial antagonist by depreciatory comment directed to things quite foreign to the issue under discussion; nor yet to associate himself with the unjust criticisms with which a man will relieve his feelings when he finds problems he had comfortably settled reopened, and sees, where he before saw a limit to his work, fresh complications introduced, and more labor and more thinking piled on him. Now we have in most controversial writing critical commentary of each kind: on the one hand, comment which all the clear and honest minds on either side would accept; on the other hand, comment which the writer's partisans would unanimously wish to disown; and again comment which some of these partisans would approve, and others not approve. And, carrying into actual practice the pacifist's injunctions would mean ignoring in controversy everything one's antagonist's partisans might wish ignored. But whosoever followed this counsel would place himself in an altogether false position. He would lay himself open to the charge of ignoring in criticism directed against himself all that was specially difficult to answer. And the controversialist who was thus edited would feel that his criticism was being bowdlerized of its best and most effective points. At the same time the controversialist, who under a self-denying ordinance overlooked in his opponent's writings all that that opponent's partisans would themselves have eliminated, would be bound to feel that he had weakened his own case quite unfairly. For, of course, in his view the passages in question would be just those which showed the desperate straits into which the defense of an erroneous generalization conducts. And finally the reader also would be ill satisfied. If a partisan, he would be sure to think that his cause and his protagonist had been prejudiced. And if simply an ordinary reader, he would be sure to feel that, with everything watered down and everything personal eliminated, he was getting absolutely no fun, and correspondingly little use out of the discussion; and, above all, that no light was being shed on the capacities and moral characters of those who aspired to be his intellectual guides.

But to go into all this is perhaps to attach undue intellectual importance to the suggestion that controversialists should be sheltered from the consequences of their own action. And it is really beyond question that the only proper way of conducting controversy is to hold every man responsible for everything that appears over his signature, and nobody else responsible.

Trephining the Sheath of the Optic Nerve

L. Müller suggests this as a new operation to cure choked disk. He resected the temporal wall of the orbit, pushed the eyeball forward, and thus obtained access to the optic nerve. He resected then a piece of the sheath 3 or 4 by 6 mm. This relieved the pressure on the nerve in the cases in which he has applied this method, and not only arrested the further progress of the visual disturbances but caused their partial retrogression, and at the same time improved the cerebral symptoms from pressure on the brain. The original article is said to have been published in the *Wiener klinische Wochenschrift*, 1916, No. 32, one of our missing exchanges.

JOURNALS ABSTRACTED IN THE CURRENT MEDICAL LITERATURE DEPARTMENT, JULY-DECEMBER, 1916

The following journals have been abstracted in the Current Literature Department of THE JOURNAL during the past six months. Any of the foreign journals, except those starred, will be lent by THE JOURNAL to subscribers in the United States and to Fellows of the American Medical Association for a period not exceeding three days. Only one journal may be borrowed at a time. Requests for periodicals should be addressed to the Library of the American Medical Association and six cents in stamps should be enclosed. This covers the average expense of mailing a journal. Domestic journals can be obtained by sending the approximate amount direct to the respective publishers. Thus most of the journals indexed are accessible to the general practitioner, no matter where he may be located.

American Journal of Anatomy. Bi-m. $7.50. 36th St. and Woodland Ave., Philadelphia.
American Journal of Diseases of Children. M. $3. American Medical Association, 535 N. Dearborn St., Chicago.
American Journal of Insanity. Q. $5. Johns Hopkins Press, Baltimore.
American Journal of the Medical Sciences. M. $5. Lea & Febiger, 706 Sansom St., Philadelphia.
American Journal of Obstetrics and Diseases of Women and Children. M. $5. William Wood & Co., 51 Fifth Ave., New York.
American Journal of Orthopedic Surgery. M. $4. 126 Massachusetts Ave., Boston.
American Journal of Physiology. M. $5. Johns Hopkins Medical School, Baltimore.
American Journal of Public Health. M. $3. 755 Boylston St., Boston.
American Journal of Roentgenology. M. $5. 67 E. 59th St., New York.
Annales de gynécologie et d'obstétrique. M. 22 francs. Paris.
Annales de médecine. M. 23 francs. Paris.
Annals of Ophthalmology. Q. $4. Mermod-Jaccard Bldg., St. Louis.
Annals of Surgery. M. $5. J. B. Lippincott Co., 227 S. 6th St., Philadelphia.
Annals of Tropical Medicine and Parasitology. Q. $5. Liverpool.
Archiv für klinische Chirurgie. Irregular. Price varies. Berlin.
Archives of Diagnosis. Q. $2. Rebman Co., 141 W. 36th St., New York.
Archives of Internal Medicine. M. $4. American Medical Association, 535 N. Dearborn St., Chicago.
*Archives de médecine des enfants. M. 18 francs. Paris.
*Archives des maladies de l'appareil digestif et de la nutrition. M. 14 francs. Paris.
Archives des maladies du cœur, des vaisseaux et du sang. M. 17 francs. Paris.
Archives of Ophthalmology. Bi-m. $5. G. P. Putnam's Sons, 2 W. 45th St., New York.
Archives of Pediatrics. M. $3. E. B. Treat & Co., 241 W. 23d St., New York.
Archives of Radiology and Electrotherapy. M. $4.50. London.
Berliner klinische Wochenschrift. W. 24 marks. Berlin.
Boston Medical and Surgical Journal. W. $5. 126 Massachusetts Ave., Boston.
Brain: A Journal of Neurology. Irregular. $4. London.
Brazil Medico. W. 20 milreis. Rio de Janeiro.
British Journal of Children's Diseases. M. $5. London.
British Journal of Surgery. Q. $6.50. William Wood & Company, 51 Fifth Ave., New York.
British Journal of Tuberculosis. Q. $1.25. G. E. Stechert & Co., 151 W. 25th St., New York.
British Medical Journal. W. $8.50. London.
Bulletin de l'Académie de médecine. W. 20 francs. Paris.
Bulletin of the Johns Hopkins Hospital. M. $2. Baltimore.
Bulletin of the Lying-in Hospital of the City of New York. Irregular. $1. 23 E. 93d St., New York.
Bulletin of the Medical and Chirurgical Faculty of Maryland. M. $0.25. 1211 Cathedral St., Baltimore.
California State Journal of Medicine. M. $1. Butler Bldg., San Francisco.
Canadian Medical Association Journal. M. $5. 145 Wellington St., W., Toronto.
Cleveland Medical Journal. M. $2. 2318 Prospect Ave., Cleveland.
Colorado Medicine. M. $2. Metropolitan Bldg., Denver.
Correspondenz-Blatt für schweizer Aerzte. W. 22 francs. Basel.
Cronica Medica. Semi-m. 6 soles. Lima, Peru.
Delaware State Medical Journal. M. $1. Wilmington.
Deutsche medizinische Wochenschrift. W. 32 marks. Berlin.
Dublin Journal of Medical Science. M. $5.
Edinburgh Medical Journal. M. $6.
*Finska Läkaresällskapets Handlingar, Helsingfors. M. Helsingfors.
Gazzetta degli ospedali e delle cliniche. Semi-w. 25 francs. Milan.
Glasgow Medical Journal. M. $5.
Grèce médicale. Semi-m. 12 francs. Athens.
Hospitalstidende. W. 27.5 kronen. Copenhagen.
Hygiea. M. $5. Stockholm.
Illinois Medical Journal. M. $2. 3338 Ogden Ave., Chicago.
Indian Medical Gazette. M. $5. Calcutta.
Journal de chirurgie. M. 44 francs. Paris.
Journal de médecine de Bordeaux. W. 15 francs.
Journal of Abnormal Psychology. Bi-m. $4. R. G. Badger, 194 Boylston St., Boston.
Journal of the American Medical Association. W. $5. 535 N. Dearborn St., Chicago.
Journal of the Arkansas Medical Society. M. $1. 810 State Bank Bldg., Little Rock, Ark.
Journal of Bacteriology. Bi-m. $5. Williams & Wilkins Company, Baltimore.
Journal of Biological Chemistry. M. $3. 2419 Greenmount Ave., Baltimore.
Journal of Cancer Research. Q. $5. Williams & Wilkins Company, Baltimore.
Journal of Cutaneous Diseases. M. $5. W. M. Leonard, 101 Tremont St., Boston.
Journal of Experimental Medicine. M. $5. Rockefeller Institute for Medical Research, 66th St. and Avenue A, New York.
Journal of the Florida Medical Association. M. $1. 334 St. James Bldg., Jacksonville, Fla.
Journal of Immunology. Bi-m. $5. Williams & Wilkins Company, Baltimore.
Journal of the Indiana State Medical Association. M. $1. 219 W. Wayne St., Fort Wayne, Ind.
Journal of Infectious Diseases. M. $5. 629 S. Wood St., Chicago.
Journal of Iowa State Medical Society. M. $2. Des Moines, Ia.
Journal of Kansas Medical Society. M. $2. 303 Commerce Bldg., Topeka, Kan.
Journal of Laboratory and Clinical Medicine. M. $3. C. V. Mosby Company, St. Louis.
Journal of Laryngology, Rhinology and Otology. M. $5. London.
Journal of Maine Medical Association. M. $2. Portland, Maine.
Journal of Medical Association of Georgia. M. $1. Harison Bldg., Augusta, Ga.
Journal of Medical Research. Bi-m. $4. 240 Longwood Ave., Boston.
Journal of Medical Society of New Jersey. M. $2. 12 Cone St., Orange, N. J.
Journal of Michigan State Medical Society. M. $3.50. 91 Monroe Ave., Grand Rapids, Mich.
Journal of Missouri State Medical Association. M. $2. 3517 Pine St., St. Louis.
Journal of Nervous and Mental Diseases. M. $8. 64 W. 56th St., New York.
Journal of Oklahoma State Medical Association. M. $2. Muskogee.
Journal of Parasitology. Q. $2. Urbana, Ill.
Journal of Pathology and Bacteriology. Q. $5.50. Cambridge, England.
Journal of Pharmacology and Experimental Therapeutics. M. $5. 2419 Greenmount Ave., Baltimore.
Journal of South Carolina Medical Association. M. $2. Greenville, S. C.
Journal of Tennessee State Medical Association. M. $2. Independent Life Bldg., Nashville, Tenn.
Journal of Tropical Medicine and Hygiene. Semi-m. $5. London.
Journal-Lancet. Semi-m. $2. 839 Lumber Exchange, Minneapolis.
Kentucky Medical Journal. M. $2. State and Twelfth Sts., Bowling Green, Ky.
Lancet. W. $8. London.
Laryngoscope. M. $5. 3858 Westminster Place, St. Louis.
Lyon chirurgical. M. 25 francs.
Lyon médical. M. 15 francs.
Medical Journal of Australia. W. 6 d. Sydney.
Medical Record. W. $5. W. Wood & Co., 51 Fifth Ave., New York.
Medizinische Klinik. W. 32 marks. Berlin.
Military Surgeon. M. $3.50. Seventh and B Streets, S. W., Washington, D. C.

W.—Weekly; M.—Monthly; Semi-m.—Semi-monthly; Bi-m.—Bi-monthly; Q.—Quarterly. *Cannot be loaned.

Mitteilungen aus der medizinischen Fakultät der Kaiserlichen Universität Kyushu. Irregular. Price varies. Fukuoka.
Mitteilungen aus der medizinischen Fakultät der Kaiserlichen Universität zu Tokyo. Irregular. Price varies. Tokio.
Modern Hospital. M. $3. Metropolitan Bldg., St. Louis.
Münchener medizinische Wochenschrift. W. 32 marks. Munich.
Nebraska State Medical Journal. M. $2.00. 468 Brandeis Bldg., Omaha.
Nederlandsch-Tijdschrift voor Geneeskunde. W. 10.50 florins. Amsterdam.
New Mexico Medical Journal. M. $2. P. O. 23, Las Cruces, N. M.
New Orleans Medical and Surgical Journal. M. $2. 1551 Canal St., New Orleans.
New York Medical Journal. W. $5. A. R. Elliott Publishing Co., 66 W. Broadway, New York.
New York State Journal of Medicine. M. $1. 17 W. 43d St., New York.
*Nordiskt Mediciniskt Arkiv. Irregular. 30 marks. Stockholm.
Norsk Magazin for Lægevidenskaben. M. $5. Christiania.
Northwest Medicine. M. $2. Cobb Bldg., Seattle, Wash.
*Nourrisson. Bi-m. 14 francs. Paris.
Ohio State Medical Journal. M. $2. Physician's Bldg., Columbus, Ohio.
Ophthalmic Record. M. $4. 7 W. Madison St., Chicago.
Ophthalmology. Q. $5. 708 Cobb Bldg., Seattle, Wash.
Paris médical. W. 16 francs.
Pennsylvania Medical Journal. M. $2. Athens, Pa.
Philippine Journal of Science. Irregular. $7. Manila, P. I.
Policlinico. W. 32 lire. Rome.
Practitioner. M. $6.50. London.
Presse médicale. Semi-w. 15 francs. Paris.
Praktitcheskiy Vrach. W. 7 rubles. Petrograd.
Progrès médical. W. 12 francs. Paris.
Providence Medical Journal. Bi-m. $1. Francis and Hayes Sts., Providence, R. I.
Public Health Journal. M. $2. York Publishing Co., Lumsden Bldg., Toronto.
Quarterly Journal of Medicine. $6.50. London.
Revista de la Asociacion Medica Argentina. M. Buenos Aires.
Revue de Chirurgie. M. 33 francs. Paris.
*Revue de Gynécologie. M. 30 francs. Paris.
Revue médicale de la Suisse romande. M. 14 francs. Geneva.
*Riforma medica. W. 35.50 lire. Naples.
Russkiy Vrach. W. 13 rubles. Petrograd.
Sei-I-Kwai. M. $2. Tokio.
*Semana médica. W. $5. Buenos Aires.
Siglo Medico. W. 20 pesetas. Madrid.
Southern Medical Journal. M. $3. 807 Empire Bldg., Birmingham, Ala.
Southwest Journal of Medicine and Surgery. M. $1. El Reno, Okla.
Surgery, Gynecology and Obstetrics with International Abstract of Surgery. M. $10. Surgical Publishing Co., 30 N. Michigan Ave., Chicago.
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SUBJECT INDEX

This is an index to all the reading matter in THE JOURNAL. In the Current Medical Literature Department only the articles which have been abstracted are indexed.

The letters used to explain in which department the matter indexed appears are as follows: "E," Editorial; "C," Correspondence; "T," Therapeutics; "Ml," Medicolegal; "P," Propaganda for Reform; "ME," Medical Economics; "ab," abstract; the star (*) indicates an "Original Article" in THE JOURNAL.

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The name of the author follows the subject entry in brackets. The figures in parentheses refer to the paragraph in the Current Medical Literature Department, the number following to the page in THE JOURNAL.

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SOCIETIES

A.—Association.
Acad.—Academy.
Am.—American.
Coll.—College.
Conf.—Conference.
Cong.—Congress.
Conv.—Convention.
Dist.—District.
Hosp.—Hospital.
Internat.—International.
M.—Medical or Medicine.
Nat.—National.
Pharm.—Pharmaceutical.
Phys.—Physician.
Ry.—Railway.
S.—Society.
Surg.—Surgical, Surgeon or Surgery.

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